

# PULP & PAPER

NOVEMBER 1958

A Wood Geneticist's Advice

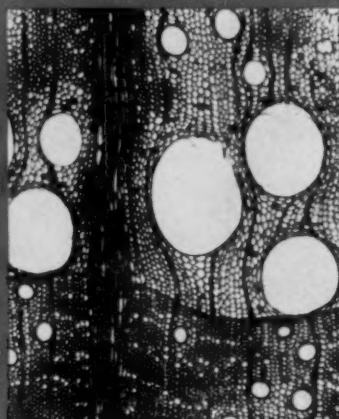
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New Grinding Techniques

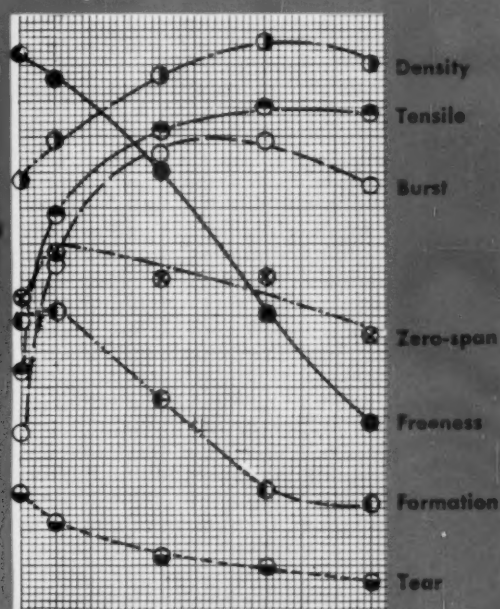
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Is More Speed Practical?

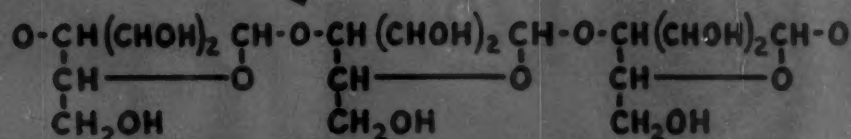
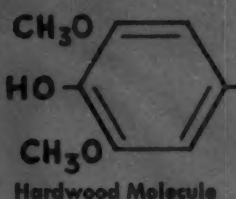
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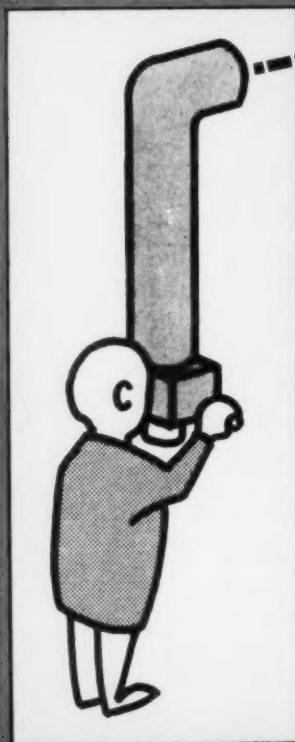
Red Oak Cross Section  
Magnified 50X



Beater Curve



Repeating Units of Cellulose



Periscope on Hardwoods:

## PULP OF THE FUTURE

Shown above — a progression from the elemental to the industrial . . . For expert appraisals of future outlook by international authorities . . . see page 55

# WAUSAU SEVEN YEARS AFTER

**First midwestern mill to use Ammonium Bisulfite Pulping reports big saving in costs; "would never go back to calcium-base process."**

Seven years ago Wausau Paper Mills converted its big pulp mill at Brokaw, Wisconsin to Ammonium Bisulfite Pulping—the first mill in the Middle West to adopt this process. What does Wausau think of A.B.P. after seven years of experience? David Smith, president and general manager, sums it up this way: "Now that we've used ammonia, we'd never go back to lime."

#### **Cooking Time Down, Yield Up**

Although acid made by A.B.P. is a little more expensive than with the calcium-base process, this cost was more than offset by the shorter cooking time required with ammonia. This has reduced the cost of steam per ton of pulp, at the same time permitted an increase in output. Wausau's three digesters were cooking 85 tons a day with the calcium process. Now they produce 100 tons a day, could turn out even more if the need arose.

Yields from the wood itself have gone up, too, because there are fewer rejects during screening. These used to run 3 or 4%, now average about 1%, depending on the wood used, number of knots, etc.

Ammonia has also given the mill wider choice of pulpwoods. Almost any species can be used—soft woods such as spruce, hemlock, tamarack, larch and balsam; hardwoods such as birch and maple.

#### **Less Maintenance**

At Wausau the switch to ammonia has eliminated entirely the maintenance problems associated with "liming-up." Strainers haven't clogged up once in seven years. Previously, they had to be cleaned every three months, while acid and relief lines required attention at least once a month. The company says that digester room maintenance has been reduced since they converted to A.B.P.

#### **Easier Pollution Control**

The unpopularity of pulp mills with their down-stream neighbors has engaged legislative attention in most of the paper-making states. This was another consideration in Wausau's decision to switch to ammonia. Pulping wastes from the process can be evaporated or burned, need not be fed into streams to cause pollution. (Wausau ponds its spent liquor on an island, but with some additional capital investment it is possible for mills to recover it.)

#### **Conversion Was Easy**

Allied Chemical's Nitrogen Division, which pioneered Ammonium Bisulfite Pulping, helped Wausau plan the conversion of its lime pulping unit to

ammonia, and Allied engineers worked closely with Wausau's staff to put the new process onstream.

Three inter-connected storage tanks were built. Two of the tanks hold anhydrous ammonia. The third, used for mixing, contains aqua ammonia at a maintained concentration of 20%. A new absorption tower for acid making was constructed. It is lined with tile and filled with layers of Raschig rings, over which ammonia trickles down while gas flows up. Some sulfite mills have converted their Jennsen towers to ammonia absorption duty by lining them, but Wausau found it more economical to build a new unit.

Automatic controls eliminate all guesswork and permit concentration of acid to be held constant or, when desired, quickly changed.

#### **Trend to A.B.P. Seen**

Today, about 16 mills are using the Ammonium Bisulfite Pulping process in the U. S. and Canada for acid-making. Allied Chemical has helped many of these mills with technical counsel and, as a leading ammonia producer, supplies many of them with the anhydrous ammonia on which the process is based. A number of other mills are studying the advantages of A.B.P.: shorter cooking time, wider use of woods, less maintenance, increased yields and, at lower cooking temperatures, better paper quality.

#### **Let's talk it over . . .**

If you're engaged in sulfite pulping, let a technical specialist from Allied tell you about the economies of Ammonium Bisulfite Pulping. Remember, no one has more experience with Ammonia than Allied.



*Allied Ammonia is available in*



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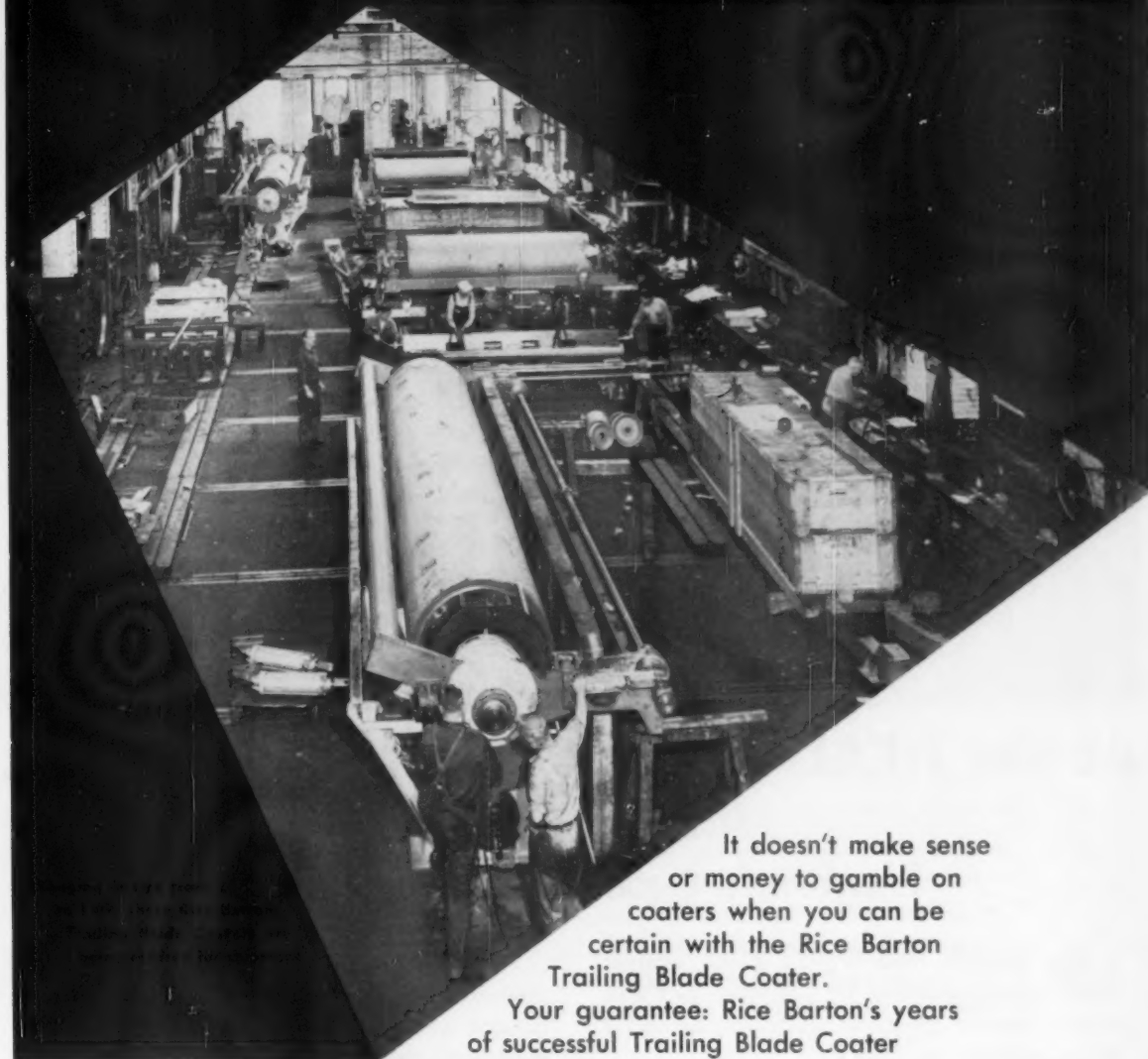


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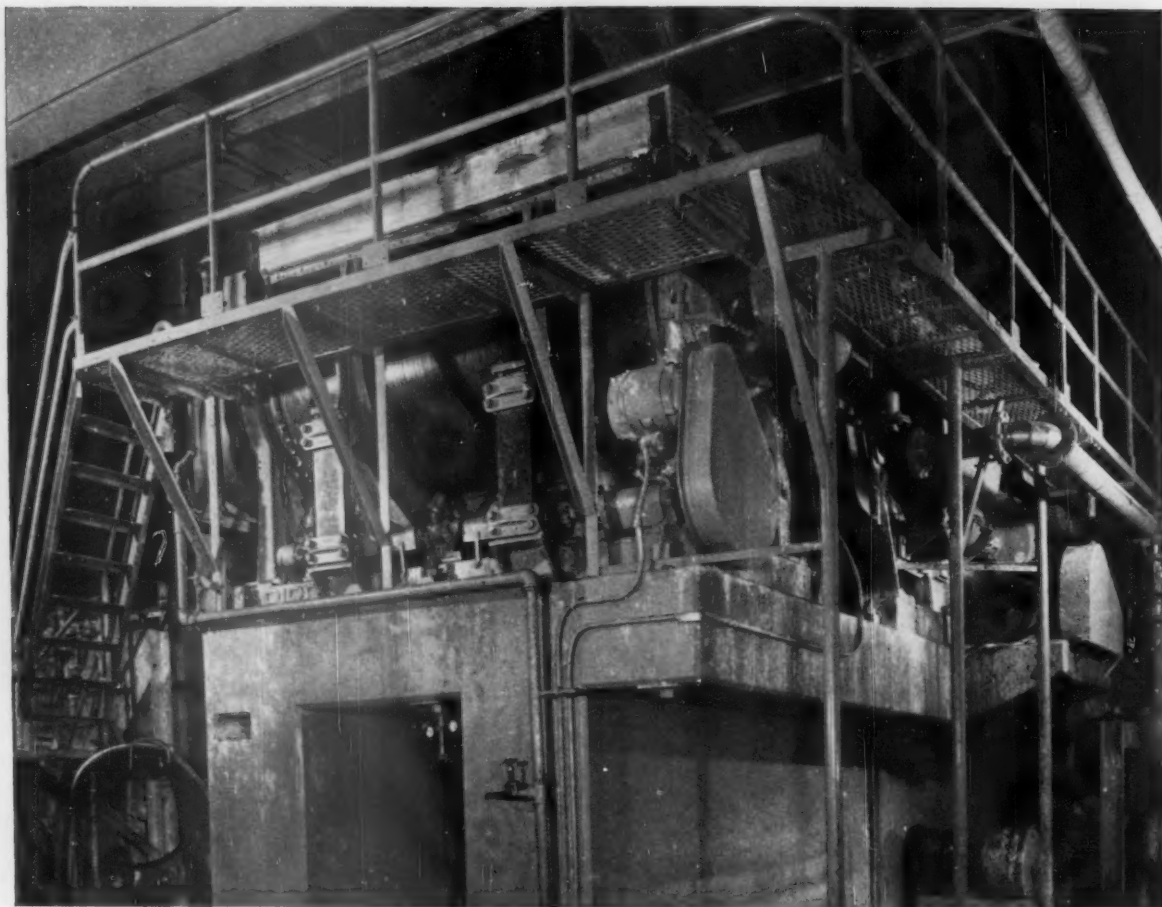
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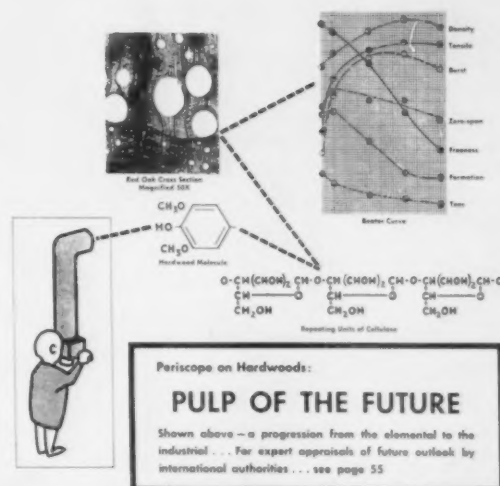
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# BIRD SCREENS

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New type of peddlars club; Proper proportion on pollution control; Upsetting sneak clause in Small Business Act.

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PULP & PAPER — November 1958

**COVER**—Because of the far-reaching importance of the recent International Hardwoods Symposium at Montreal, sponsored by TAPPI and CPFA Technical Section, PULP & PAPER endeavored to create a cover this month that would measure up to it.

The scientific appropriateness of each item in the cover presentation has been carefully checked. P&P editors and its artist, Steve Thorpe, worked out the general scheme and are indebted for scientific assistance and checking to Philip N. Joranson, Irving H. Isenberg and Olga Smith, especially, and to the Institute's Pulp and Papermaking Section.

### "Wood of the Future"—In Your Plans? 55

Inevitably, the future wood is hardwood, writes Dr. J. N. Swartz of Bowaters. He appraises the real importance of recent international symposium at Montreal, wonders if this industry is sufficiently alert to its significance.

### New Groundwood Process from Italy 72

One of most important papers given at another international meeting on mechanical pulping, held at Quebec City, explains this technique. Other new developments were presented here.

### Put Wood in Separate Bins, Says Geneticist 66

This comment at Alkaline Pulping Conference made delegates sit up. Tony Pesch of IP pictures our knowledge of wood as "still in the Stone Age."

### Logging on Roof of North America 128

Logging in Rocky Mountain forests just outside Yellowstone National Park teaches useful methods for future when more pulp will come from this region.

PULP & PAPER is published monthly except July when publication is semi-monthly, at Bristol, Conn., by Miller Freeman Publications, Incorporated. Entered as second class matter, Dec. 4, 1951, at Post Office, Bristol, Conn., under Act of March 3, 1879. Editorial office: 1791 Howard St., Chicago 26, Ill.; advertising office: 370 Lexington Ave., New York 17, N.Y.

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# Microlyzed\*



Microstructural study of raw steel BEFORE heat treating. Photomicrographs are 400 x magnifications using Picric acid etching reagent.

Microstructural studies of cutting edge area and ears AFTER heat treating illustrating uniformity of hardness throughout.

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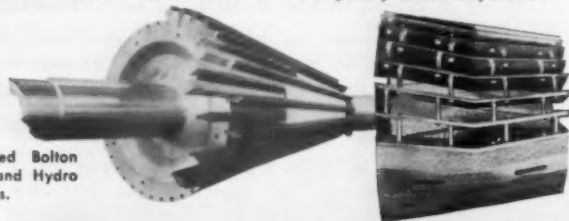
Furnace temperatures are controlled to within tolerances of 5 degrees. Hardening is done in a BOLTON-designed quench in which each knife is clamped to maintain straightness. This exclusive method eliminates the need for later

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1791 Howard St.  
Chicago 26, Ill.  
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Advertising &  
Production Office  
370 Lexington Ave.  
New York 17, N. Y.  
MURrayhill 3-9294

Atlanta 19, Ga.—2640 Winding Lane,  
N.E., ME 6-2385

Cleveland 3, Ohio—4500 Euclid Ave.  
EXpress 1-4180

Seattle 4, Wash.—71 Columbia St.,  
MAin 2-1626

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PULP & PAPER — November 1958

# The Editor Reads His Mail



Address letters to The Editor, PULP & PAPER, 1791 Howard St., Chicago 26, Ill.

## Good Wishes from Folke Sundblad

—Stockholm, Sweden

Editor: This industry is very fortunate to have a periodical concentrating on international matters in your new magazine, PULP & PAPER INTERNATIONAL, and while it is a very wide field to cover in an unbiased way, I am sure it will enjoy a real success. It always makes my heart beat faster when I hear from old friends in America, where it was my privilege to take a small part in the pioneering of American pulp exportation.

Yesterday I reached my 73rd birthday (Sept. 25) but I am still taking a great interest in pulp.

FOLKE SUNDBLAD

## What Russians Didn't Know

Great Neck, N.Y.

Editor: I was interested in your recent article on Russia in which American scientists reviewed Russian pulp and paper literature and concluded the Russians were ignorant of the Kubelka-Munk theory describing light reflecting and transmitting properties of paper sheets and pigment films. Please advise where we can find more information on this theory. We must profess the same ignorance as the Russians.

EDWARD JAHODA  
Andrews Paper & Chemicals  
Co.

Eds. note—Dr. J. A. Van den Akker, Institute of Paper Chemistry, Appleton, Wis., wrote a paper on the subject published in TAPPI magazine, Nov. 1949 issue. In German, P. Kubelka and F. Munk wrote about it for Z. Tech. Physik (correct spelling), 12:593-601 (1931), and P. Kubelka in Journal Opt. Soc. Am. 38: 448-457 (1948).

## "Useful Service"

—New York

Editor: Congratulations on launching your new PULP & PAPER INTERNATIONAL. It is a worthy companion to your domestic PULP & PAPER issue which performs such useful service for all of us.

T. R. WILBERT  
Vice President  
Gottesman & Co. Inc.

## P & P International Needed

New York City

Editor: Your new international edition of PULP & PAPER is a move in the right direction. Now that the production capacity of the industry in this country has temporarily caught up with demand, the international opportunities become more definite and more attractive. Most major companies are in the international field now, and practically every pulp and paper organization is surveying and appraising the opportunities. In this field, PULP & PAPER INTERNATIONAL will be of further great service to the industry.

EDWARD MCSWEENEY  
Vice Pres. and Treas.,  
Perkins-Goodwin Co.

## Oops — Sorry!

PULP & PAPER is very proud of its right to carry the two highest symbols of publishing quality shown in the lefthand column of this page. These are the symbols of the Audit Bureau of Circulations and the Associated Business Publications.

Our new magazine, PULP & PAPER INTERNATIONAL, first regular issue of which will be the January 1959 issue, of course is not and cannot be a member of either association.

Our face is very red to find that through an error, the pilot issue of PULP & PAPER INTERNATIONAL, published in July, inadvertently carried these symbols. We hope no one was misled into believing the impossible—that we could qualify for these symbols before we even started regular publishing.

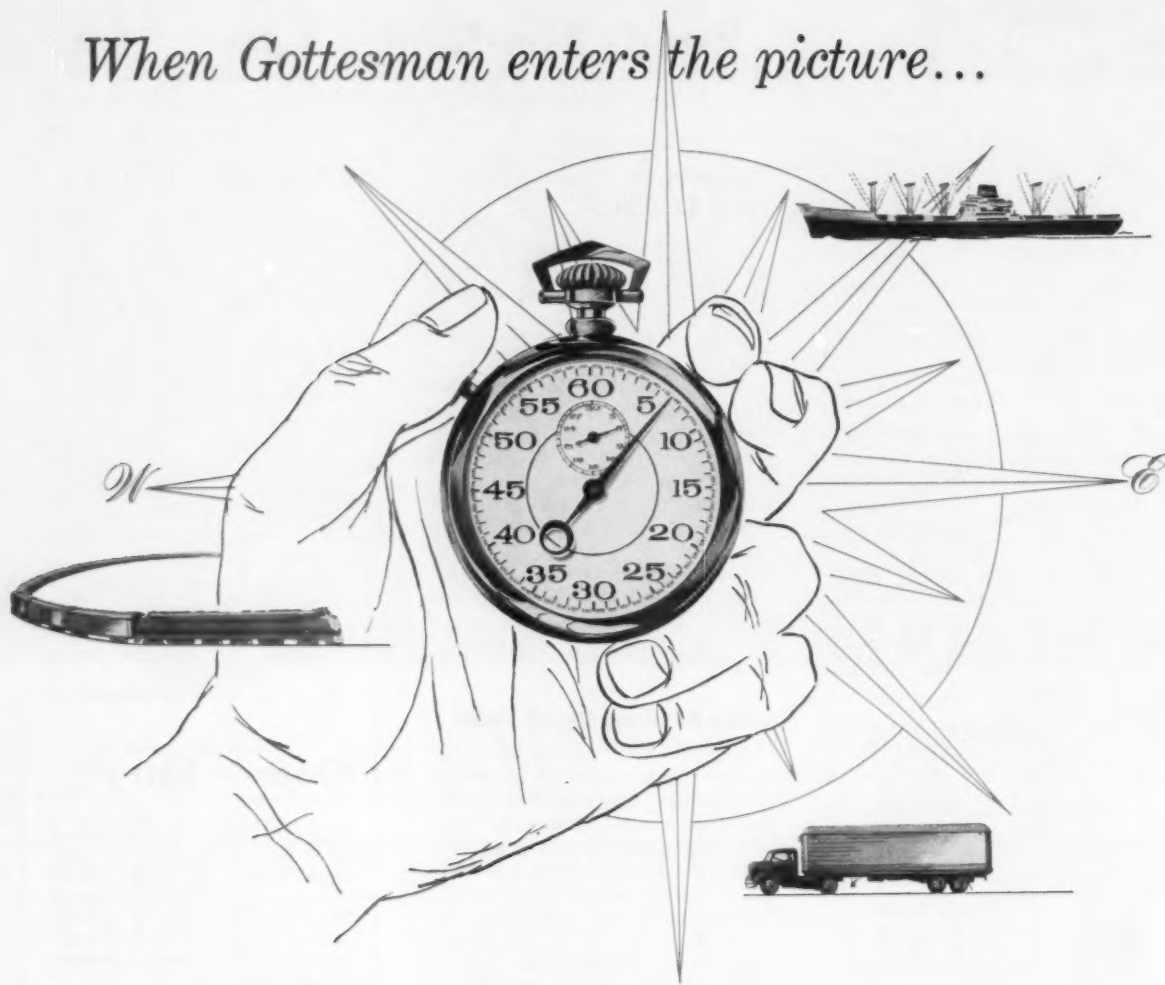
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## The Staff

PULP & PAPER

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## General Outlook

RUSSIAN PULP AND PAPER WILL BE "CHALLENGE" . . . Senator Henry M. Jackson (Dem., Wash.) says Russia is engaged in "economic warfare" in aluminum, lead, zinc and tin, and he predicted that "pulp and paper will be added to the list of commodities in which Russia will challenge the United States."

"THE MOST STRIKING ECONOMIC FACT TODAY is the pace of business recovery which has confounded carping critics and faint hearts," says Secretary of Commerce Sinclair Weeks. "The recovery is developing faster and on a broader scale than most people anticipated last April. The outlook is the brightest yet this year," he added.

PAPERBOARD OUTPUT CONTINUES HIGH . . . Although production eased slightly during the last week in September, it was still the third highest on record, totaling 308,-455 tons. The week before a record 311,174 tons were made.

GOOD NEWS FOR RAYON PULP . . . Sales and earnings of American Viscose Corp. showed a marked increase in the third quarter, topping the like period last year and sharply exceeding first and second quarters of 1958, according to William H. Brown, Amvisco vice pres. "Ketchikan Pulp Co., held jointly with Puget Sound Pulp & Timber Co., is running at full capacity," he said.

BACK IN THE GROOVE! . . . The outlook really brightened on the West Coast when one of the biggest mills out there set a monthly production record in August, beating a record which had stood since March 1956.

"PAPER INDUSTRY IS LEADING THE WAY out of the recession, says the Value Lines Investment Survey, and in 1959 total production of paper and paperboard should rise 5 to 7% above the peak output of 1956. The industry's basic strength has been confirmed by its record during the recent recession, the Survey notes.

1958 EXPENDITURES ABOUT \$28 MILLION . . . D. J. Hardenbrook, vice pres. of Union Bag-Camp Paper Corp., says the company's capital expenditures will total about \$28 million in 1958 and about \$17 million in 1959. Current inventories are "right down to the bone," and the company plans to run both its mills full for the balance of the year, he said.

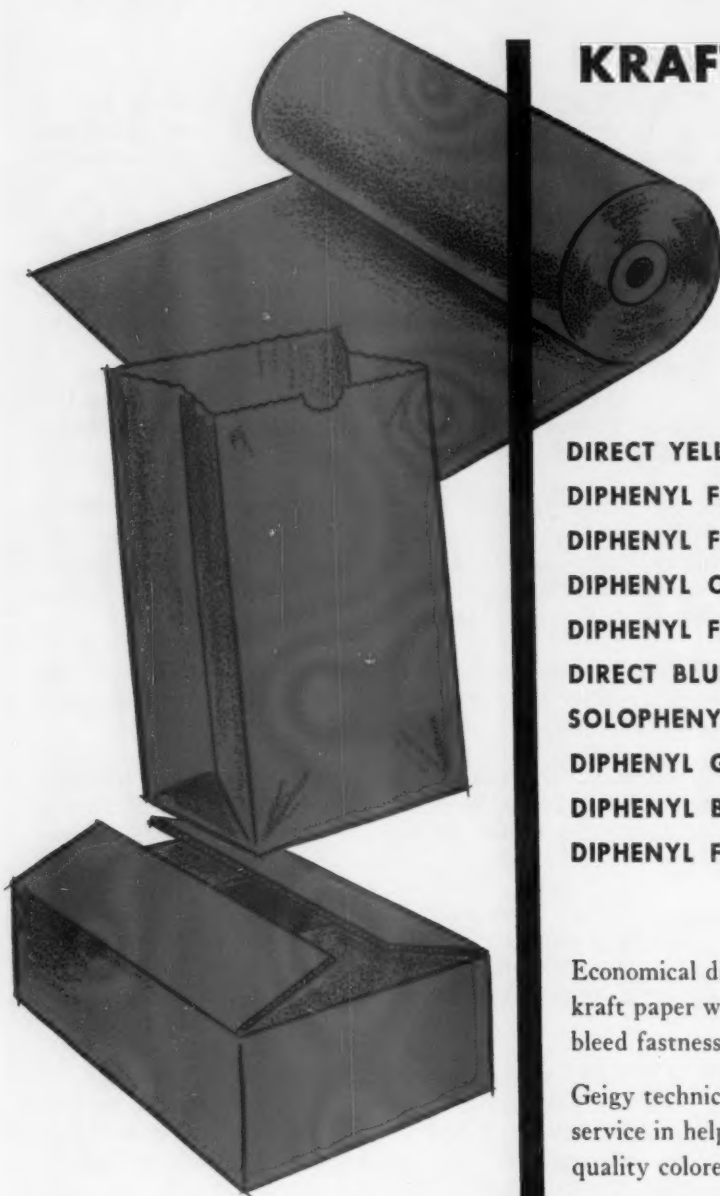
PACKAGING HELPS FOOD COMPETE WITH LUXURIES, making the percentage of disposable income spent for food as high now as it has ever been—25%, as compared with 22% in 1940, according to Dr. Harry C. Trelogan, director, marketing research div., U.S. Dept. of Agriculture. He says that better packaging deserves at least part of the credit for this "unanticipated economic phenomenon."

MORE BUSINESS FOR BUILDING BOARDS AND PAPERS . . . Construction contract awards in recent months are highest on record, reports F. W. Dodge Corp., with almost all kinds of construction activity higher.

PREDICTS NEWSPAPERS WILL HAVE MORE PAGES, LARGER CIRCULATIONS . . . Dean Edward W. Barrett of Columbia University's Graduate School of Journalism says newspapers in the future will have more pages and larger circulations—increasing the demand for newsprint. He bases the prediction on "basic economic and social trends."

Please turn page for more

## QUALITY COLORS FOR QUALITY



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## New Mills And Mill Expansion

WILL INVEST \$15,000,000 IN ADDITIONS . . . Oxford Paper Co. is embarking on a three-year improvement program at its Rumford, Me., mill, to include: a new softwood kraft mill with capacity of 175 tpd; new 300 tpd chemical recovery plant; new chlorine dioxide bleaching system, and additions boosting the hardwood kraft mill from 250 to 350 tpd. Completion will end production of sulfite pulp in Rumford.

MARATHON'S ALABAMA MILL ON STREAM . . . Marathon's new pulp and paper mill at Naheola, Ala., has undergone preliminary tests and was to be running market products at this reading.

NEW MILL TO PRODUCE IN 1961 . . . Engineering and site preparation is proceeding for Celanese's Celgar kraft pulp mill at Castlegar, B.C., first off-tidewater mill in British Columbia. Builders anticipate the pulp market will be in balance again in the early 1960's.

SEEKS WEST COAST LOCATION FOR MILL . . . Investigations are being conducted for a possible site for a proposed pulp mill to be built by International Paper Co. Among sites being studied are Longview, Wash., Roseburg, Gardiner, Klamath Falls and Grants Pass, Ore., and other points in northern Calif. An IP spokesman says no decision has been made.

BUILDS \$2,500,000 PAPER SPECIALTY PLANT . . . Canadian International Paper Co. is building a new plant at Pointe-aux-Trembles, Que., to replace three others in Cap-de-la-Madeleine and Ottawa. CIP's subsidiary, Continental Paper Products, Ltd., will operate it. The CIP mill at La Tuque, Que., will supply kraft paper.

ORDERS NEW SUPERCALENDER, REWINDER . . . Blandin Paper Co. has ordered a new 148 in. face, 12-roll stack supercalender with speeds up to 1,800 fpm, and a 150-in. face rewinder capable of speeds up to 3,500 fpm, from Appleton Machine Co. Delivery: April 1959.

PROSPECTS FOR NEW PULP MILL IMPROVE . . . Howard Smith Paper Mills' acquisition of Huron Forest Products improves chances for a future pulp mill in Ontario's Blind River area. Huron Forest Products' timber limits include pulpwood as well as sawlog forest, and for several years they were considered the basis for a pulp mill in that area.

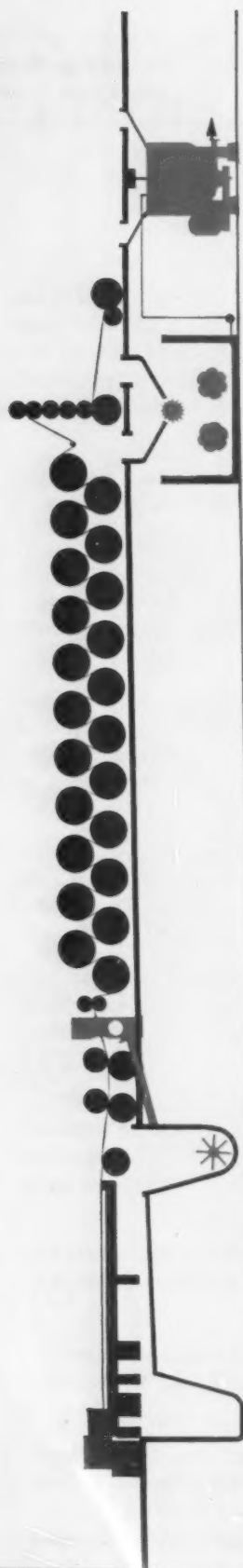
PLANS MAJOR EXPANSION . . . Peninsular Paper Co. is building a 34,000 sq. ft. addition at its Ypsilanti, Mich., plant. It will initially be used as warehouse space but is designed to accommodate a new paper machine in the future.

STILL STUDYING ENTRY INTO PAPER INDUSTRY . . . U.S. Plywood Corp. is "still studying" the possibility of going into the paper business, according to S. W. Antoville, retiring president and chairman of the firm.

TEST RUNS WILL BE MADE "ANY DAY NOW" . . . Southland Paper Mills, Lufkin, Tex., plans to make test runs on its new \$3 million Pusey & Jones newsprint machine "any day now."

Please turn page for more





# **IMPCO OFFERS COMPLETE BROKE PULPING AT ALL POSITIONS ON YOUR PAPER MACHINE**

Over two thousand Impco Agitators for every conceivable mill requirement, both before and after the paper machine, are in successful operation. As a pioneer in the designing of such equipment, Impco also regularly builds broke handling devices for various positions under the paper machine. Consequently, such units as Couch Pit Agitators, Sheet and Roped Press Broke Shredders, Dry Sheet Shredders, Solvo Pulpers and Defiberers have been developed. As a result of this mill proven experience, Impco can provide you with either a complete broke handling system or individual components.



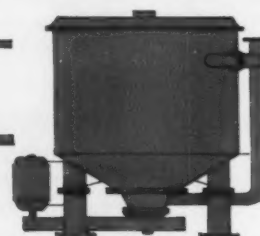
Press Broke  
Shredder



Weedless Repulper



Dry Sheet Shredder



Solvo Pulper



**IMPROVED  
MACHINERY INC.**

NASHUA, NEW HAMPSHIRE

In Canada, Sherbrooke Machineries Limited, Sherbrooke, Quebec

MODERNIZATION OF MACHINE . . . Howard Paper Mills, Inc., Dayton, O., has installed a new Manchester Machine Fourdrinier section on its No. 1 paper machine, including a new breast roll, shake mechanism and table rolls. A new 6-roll calender stack and reel by Manchester, were included in the modernization program.

BUYS INTEREST IN POLYETHYLENE MANUFACTURING FIRM. . . . The Mead Corp. purchased a substantial interest in Lamex, Inc., Norcross, Ga., manufacturers of polyethylene products for the textile, agriculture, food and paper industries.

CROSSETT "BEEFS UP" EFFLUENT SYSTEM . . . The Crossett Co. is effecting a \$102,000 expansion of its stream improvement system. The program includes two new fiber settling basins and alterations on an existing impounding basin, to be completed by November.

## Other News

PAPERBOARD KEEPS RISING . . . Paperboard demand in U.S. rose to highest level in a year in the week ending Oct. 4. It reached 373,237 tons. For production it was the third best week on record—308,845 tons.

SPREADING "THE GOOD WORD" . . . Some 30 or so professors from as many colleges and universities were guests of the APPA and affiliated groups, including TAPPI, at conference on opportunities for students in this field, held for two days in early October at the Moraine hotel, Highland Park, Ill.

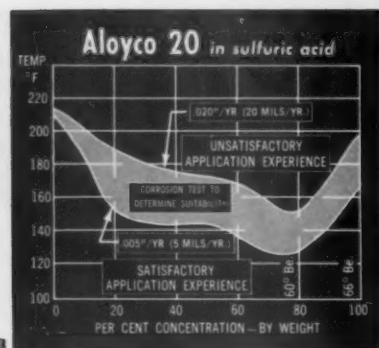
MORE INDUSTRY MERGERS . . . Agreement to merge Hankins Container Co. into Flintkote Co. was approved by directors of both firms. Hankins, headquartered in Cleveland, has seven plants. Union Bag-Camp Paper Corp. owns 9% of Hankins' stock. Flintkote also arranged to purchase Orangeburg Mfg. Co., Inc., producer of bituminized fiber sewer and drain pipe. American Box Board Co., Grand Rapids, Mich., plans to acquire Wolverine Carton Co., Grand Rapids. Union Bag-Camp is negotiating to acquire Universal Paper Bag Co., New Hope, Pa.

ADMITTED TO TRADING . . . Common stock of Georgia-Pacific Corp. has been admitted to unlisted trading on the Pacific Coast Stock Exchange.

NEW METHOD FOR STUDYING PULP STRUCTURE . . . Dr. L. R. Parks of Buckeye Cellulose Corp.'s research and development laboratories announces a new x-ray diffraction technique which permits a complete characterization of pulp structure in two days instead of the two weeks formerly required. Since the new method is so easy and efficient, many pulps have already been analyzed and Buckeye researchers have been able to arrange pulps in groups according to species, pulping history and degree of purity.

REVOLUTIONARY NEW PAPER CUP was introduced by Dixie Cup Div. of American Can Co. at the recent National Paper Trades Assn. in Chicago. Dixie claims the new hot drink cup is stain-proof, smoother than most pottery and china, and that the lining completely does away with paper taste.

SUPPLIERS AFFILIATE . . . Beloit Iron Works will acquire the assets of E. D. Jones & Sons Co. E. D. Jones will continue to manufacture its same product lines under its present management.



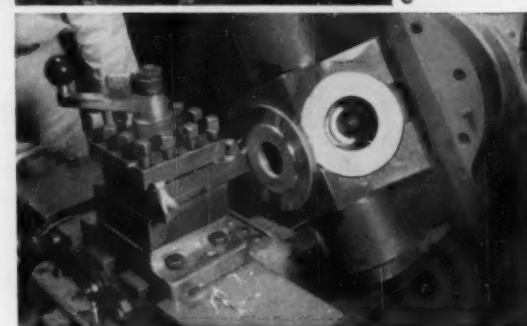
**A. Your Problem** in handling corrosives is discussed with a specialist when you sit down with an Aloyco Sales Engineer. He handles only one line, knows his business.

**B. Right Alloy** for your application is based on 29 years of specialized experience in the field plus continuing research in Aloyco metallurgical labs.

**C. Valve Casting** is made from Aloyco design in Aloyco foundry, only foundry ever built to produce pressure-tight Stainless Steel Valve castings, exclusively.

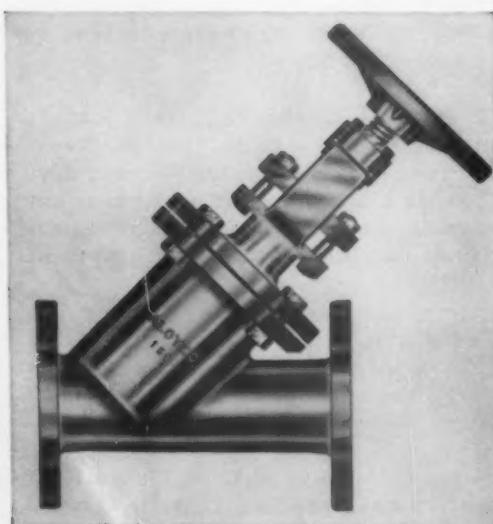
**D. Special Techniques** in machining stainless steel, plus most modern equipment in Aloyco plant assure you precise tolerances, trouble-free performance.

**E. Aloyco Y Valve**, shown here in various stages of production, is one of Aloyco's complete line of valve types, alloys, sizes, pressures—including nuclear valves.



## BEHIND EVERY ALOYCO VALVE... specialization

*... to help you handle corrosives*



Valves often look alike—even stainless steel valves. But they won't necessarily perform alike when you get them into the line.

Here are some of the special skills and facilities that make the difference between Aloyco valves and others. Some of the "extras" you get with Aloyco valves are staying power, minimum maintenance, trouble-free operation in severe as well as mild corrosive service. Doesn't it make sense that the one company specializing in the manufacture of Stainless Steel Valves exclusively is your best source of supply?



**ALLOY STEEL PRODUCTS COMPANY**

1316 West Elizabeth Avenue, Linden, New Jersey



**Fiberboard Like Hardwood**

Stockholm, Sweden . . . A new fiber building board, developed by Svenska Cellulosa A/B, is claimed to have all the qualities of prime grade hardwood and has a specially prepared surface on one side which gives it the appearance of decorative tropical hardwood. The decorative surface forms an integral part of the fiberboard and is not pasted on to it. The surface may be either sealed with a transparent cellulose or plastic lacquer, or unsealed.

**Will Build in Mexico**

Mexico City . . . The San Cristobal Sugar Mill, in Mexico, plans to invest 150 million pesos (\$12,000,000) in a paper mill to utilize sugar cane bagasse. Roberto Garcia Mora, head of the mill, says the plant will produce various grades of paper for wrapping, paperboard containers and boxes. It will also experiment with the use of bagasse paper for paper towels, napkins, and other uses.

**Dow Expands in S. America**

Caracas, Venezuela . . . The Dow Chemical Co. has formed an overseas subsidiary company in Venezuela to handle its international operations. Dr. Leland I. Doan, pres. of the parent company, is chairman of the wholly-owned subsidiary, Dow Chemical International, Ltd., S.A. Clayton S. Shoemaker is pres. of the subsidiary and Robert F. Kincaid, formerly mgr. of Dow's Montevideo, Uruguay, office, is mgr. of the firm's offices recently opened in Caracas.

**West German Output Increases**

Bonn, West Germany . . . Cellulose production in May increased to 53,527 metric tons (58,878 short tons), 2,486 metric tons (2,735 short tons) more than in April. Imports of sulfite cellulose came to 9,859 metric tons (10,845 short tons), 1,752 metric tons higher than in April. Imports of sulfate cellulose were 15,554 metric tons, an increase of 924. Cellulose inventories at paper and board mills fell to 96,125 metric tons compared with 105,339 in April. A total of 48,950 metric tons of mechanical pulp was produced in April, 2,260 tons higher than in April.

**French Mill Gets U. S. Chipper**

Haute-Garonne, France . . . Le Cellulose d'Aquitane in Haute-Garonne received shipment of a 42-in., 10-knife chipper from Sumner Iron Works, Everett, Wash., recently.

**Refuse Hog Travels Far**

East Pakistan . . . A Montgomery Eat-Rite refuse hog was shipped to the Khulna newsprint plant in East Pakistan recently. The hog is manufactured by Jacksonville Blowpipe Co., Jacksonville, Fla. The Khulna mill, scheduled for startup by the end of 1959, will have capacity of 23,000 tons of mechanical printing papers annually.

**Turkey to Get New Mill**

Ankara, Turkey . . . Turkey's government is supporting a project to build a new mill near Adana, at Tarsus. Most of the capital of 32 million Turkish pounds (about \$11 million) was provided by private investors, but the government will contribute some. Annual capacity, will be about 40,000 tons each of pulp and paper.

**Spanish Firm Builds Mill**

Gerona, Spain . . . Compiementos Industriales, S.A., Calle Consejo de Ciento, 550-552, Barcelona, recently built a mill for manufacturing special sensitized photographic papers at Gerona. The plant, said to be one of the most modern of its kind in Europe, is expected to produce enough to satisfy Spain's requirements completely. Previously base paper was imported from Britain and Germany and sensitized in Spain. Pulp must still be imported from Sweden but the value of imports will be only 30% of the value of the paper imported before. T. H. Dixon and Co., Ltd., of Letchworth, Herts, supplied some of the machinery for the new mill.

**British Board Mill Starts Up**

Thatcham, Berks, England . . . A highly automated board mill has been put in operation by Colthrop Board and Paper Mills Ltd., part of the Reed Paper Group, near Thatcham, Berks. A new machine, making mainly folding box board, will double the output at Thatcham. Cost of the expansion was £5 million, or about \$14,000,000.

**Finnish Machines to Rumania**

Helsinki, Finland . . . Finland will ship machines for the paper, chemical pulp and wallboard industries to Rumania in 1958 under a trade agreement. Pulp, paper and board shipments worth a total of 9,100,000 rubles are included in the agreement.

**Israeli Mill Has Good Year**

Hadera, Israel . . . American Israeli Paper Mills Ltd. produced 14,979 metric tons (16,477 short tons) of paper during the fiscal year ended Mar. 31, 1958. Sales of 15,022 short tons represent a 10.6% increase in shipped tonnage and a 20.4% increase in net sales. Construction of the company's new pulp mill and expanded manufacturing facilities is proceeding on schedule and is expected to be completed before the end of 1959. Paper production capacity will be increased to 40,000 metric tons (44,000 short tons) per year. The pulp mill, using local agricultural residues, will supply more than 50% of the company's raw material requirements.

**Buckeye Sponsors Research**

Uppsala, Sweden . . . Research on the solution state of technical viscoses was begun recently by Buckeye Cellulose Corp., Memphis, Tenn., in cooperation with the University of Uppsala. O. H. Alderks, Buckeye vice pres. for research and development, says the three-year project involves study of the molecular properties of cellulose xanthate in viscose solutions and will relate molecular sizes and shapes to types of pulp and methods of xanthate preparation and dissolution. This information is needed to guide pulp producers toward more precise tailoring of pulps to specific end-uses, as well as to improve product performance.

**Department of Correction**

Mexico City, Mexico . . . The statement, which appeared in the 1958 World Review Number, that Anglo-Canadian Pulp & Paper Mills participated in the capitalization of Fabricas de Papel Tuxtepec, S.A. de C.V., near Ciudad Jarez, Oaxaca State, is incorrect. Actually, neither Anglo-Canadian nor any of its affiliates has any capital invested in Fabricas de Papel Tuxtepec and was at no time a stockholder or shareholder of the company.



In Holland...

In Holland as well as in the U.S.A....

...papermakers use and like

# ALBACEL & ASTRACEL

CHLORINE DIOXIDE BLEACHED, SOFTWOOD SULPHATE

CHLORINE DIOXIDE BLEACHED, HARDWOOD SULPHATE

Balanced Paper-Grade Pulps Created by Papermakers for Papermakers

Throughout the free world, papermakers use and like Riegel's Albacel and Astracel as paper-grade pulps that provide the right balance of all important qualities: brightness, cleanliness, strength, flexibility and proper beating characteristics.

**RIEGEL PAPER CORPORATION**

260 MADISON AVENUE, NEW YORK 16, N. Y.

**Water Removal—  
German Report**

MÜLLER-RID, W., and PAUSCH, G.  
Wochbl. Papierfabrik. 86, no. 8:  
298-300, 302-4, 306-8 (April 30,  
1958). [In German] Abstr. Bull. Inst.  
Paper Chem. 29: 44.

The porosity of wet pulp web determines not only air consumption and the maximum possible final dryness but also formation of the sheet on the paper machine. Thus, the air consumption was smaller for pulps beaten with stone bars than for those holandered with metal knives. Theoretically, continuous suction requires less air than does discontinuous suction drainage to reach the same final web dryness. The basis weight and drainage (filtration) behavior of a pulp determine the efficiency and economy of a suction-drainage installation. An experimental installation for the characterization of pulps and for the design of efficient water-removal equipment is described. C.L.B.

**Mechanical Pulp Study**

BRECHT, W. Darmstadt Institute, West Germany. Assoc. tech. ind. papetière, Bull. no. 5: 185-91 (1957). [In French] Abstr. Bull. Inst. Paper Chem. 29: 59.

In the equation representing the effective energy,  $N$ , of the grinder as a function of the friction coefficient, grinding pressure, working-surface area, and peripheral speed, the friction coefficient can be eliminated by introducing as a related parameter the degree of roughness,  $S$ , of the pulpstone. In this form, the relationship can be expressed as " $N$  is proportional to production  $\times$  quality," which means that for a certain  $N$  (determined by the size of the grinder) an increase in production can be achieved only at the expense of pulp quality. This conclusion, confirmed by numerous experiments in which effect of each variable (pressure, peripheral speed, and stone roughness) on total production and pulp quality was investigated, was an important factor limiting the tendency to build larger and more powerful grinders. Recently, a different experimental approach was adopted, which consists of adjusting the roughness of the stone at different speeds or pressures (or both) so as to obtain pulps of identical characteristics. In experiments carried out on a small grinder with pinewood,

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pressures of 0.9, 1.4, and 1.85 kg./sq. cm. were combined each with peripheral speeds of 8, 13, and 18 m./sec. The working-surface area was kept constant, and the stone roughness was adjusted so as to give pulps of a definite freeness (65° S.-R.), definite breaking length (3000 m.), or definite initial wet strength (110 g. for a web of 16% dryness). The effect of increased pressure was considerably more pronounced than that of increased peripheral speed. Therefore, to increase production without lowering the pulp quality, the peripheral speed should be increased as much as possible, rather than the grinding pressure. The resulting effect on pulp quality can be counterbalanced by the use of smoother pulpstones. Pulpstones of a still higher degree of smoothness are needed if both speed and pressure are increased. J.S.

**Solid Board Compressibility**

KLINGELHÖFFER, H., and BEIER, M. Allgem. Papier-Rundschau no. 11: 544-7 (June 5, 1958). [In German] Abstr. Bull. Inst. Paper Chem, 29: 79.

Among mechanical stress-strain properties of board, the evaluation of compression resistance has received comparatively little attention. An apparatus for determining this property is described. It is essentially a modification of the Frank tensile tester with a pressure-exerting and -measuring attachment, in which solid (and other) fiberboards can be subjected to pressures of up to 1000 kg./sq. cm. Compressibility is expressed as a percentage of the theoretical maximum, as determined by oil absorption. The asymptotic approach to this maximum in plots of pressure against thickness compression gives a valuable indication of the cushioning behavior of fiberboard as a function of moisture content and other variables, such as the effect of impregnating treatments, heat treatment, etc. Compressive stresses can be visualized by micrography of crushed samples that have been marked by incision with colored razor blades. Observations of fiber deforma-

tion, with pressure applied along and normal to the fiber axis, can give valuable hints concerning the manufacture, finishing, and conversion (creasing, folding, winding, etc.) of solid boards. C.L.B.

**Swelling Effect on Sulfites**

WULTSCH, F., and WEISSMANN, L. Das Papier 12, no. 9/10: 204-10 (May, 1958). [In German; English and French summaries] Abstr. Bull. Inst. Paper Chem. 29: 8.

Four sulfite pulps (a hard and a soft pulp, both bleached and unbleached) were subjected to beating with and without preliminary swelling in pure tap water at 20° C. After equivalent beating, the strength properties of the swollen pulps were superior to those of the nonswollen pulps. It is suggested that drained pulp be stored in suitable vats for 4 hr. prior to beating; this treatment causes a 15% increase in tensile strength without altering the power consumption during subsequent beating. To obtain pulps of equal strength properties, the stock thus stored requires less beating and shows improved drainage on the paper machine as compared with the nonstored, nonswollen stock. L.E.W.

**Artificial Fiber Curling**

M. S. Allgem. Papier-Rundschau no. 4: 157-8 (Feb. 20, 1958). [In German] Abstr. Bull. Inst. Paper Chem. 29: 40.

A chemical process for imparting a spiral curvature and high elasticity to cotton, wood-pulp, waste-paper, and other cellulosic fibers to be converted into filter, blotting, absorbent, saturating, copying, and other grades of paper is described. The fibers are filled into an iron cylinder (3.5 m. diameter, 1.5 m. high) provided with a double perforated bottom and three internal vertical tubes (40 cm. diameter) made of porous clay. A solution of caustic soda in water (9° Bé. at 22° C.) is added in an amount of 160 g. sodium hydroxide for 900 kg. of oven-dry fibers, and the clay tubes are filled with hydrochloric acid (1 volume in 2 volumes of water). The fibers are mixed mechanically with the solution while steam is admitted intermittently over a 24-hr. period. It is suggested that this chemical treatment be combined with an American mechanical curling process. C.L.B.



# CYANAMID LIQUID ALUM

**Colder than ice water  
...yet flows freely!**

If you are considering a liquid alum installation, here's good news in connection with any possible "freeze-up" worries. Cyanamid's Liquid Alum won't crystallize even at sub-freezing temperatures.

Well worth your investigation are the year-round advantages of Cyanamid Liquid Alum—lower cost, labor savings and easier, neater handling. Our extensive know-how on dry-to-liquid conversions is available through our local representative to help in your planning.

## HELP WANTED?

### LOW TEMP. HELPS SIZE

Two factors credited by a board manufacturer for good sizing are: (1) the addition of 5 to 7 lbs. rosin size and 3 lbs. sodium phospho aluminate per ton at the regular box; and (2) dropping temperature down to 160-180° on the first eight or ten driers.

### BETTER SHEET FORMATION

Better disintegration of fiber bundles and improved distribution of rosin size is credited by an Indiana mill to ACCOCEL® 741 when added in very small amounts to the breaker beater.

### FOIL RATTLE BEAT

A Wisconsin mill eliminated the harshness and rattle on lightweight aluminum foil backing papers by switching from regular rosin size to CYFOR® Fortified Rosin Size. Now much less is required on the fiber to give consistently good results.

### NON-STICKING AT DRIER

One mill has found that in addition to its wet-strength advantages, PAREZ® 607 Wet-Strength Resin aids in keeping paper from sticking to high speed driers.

### TAKING STOCK

Mills everywhere must take stock of paper market trends, and plan accordingly. We do it, too. That's why Cyanamid continually develops new and improved products for the paper industry...and that's how Cyanamid can offer the largest line of paper chemicals available to mills and fabricators. The Paper Chemicals Department is at your service.

### BEAT STICKING AT LOW

Now  
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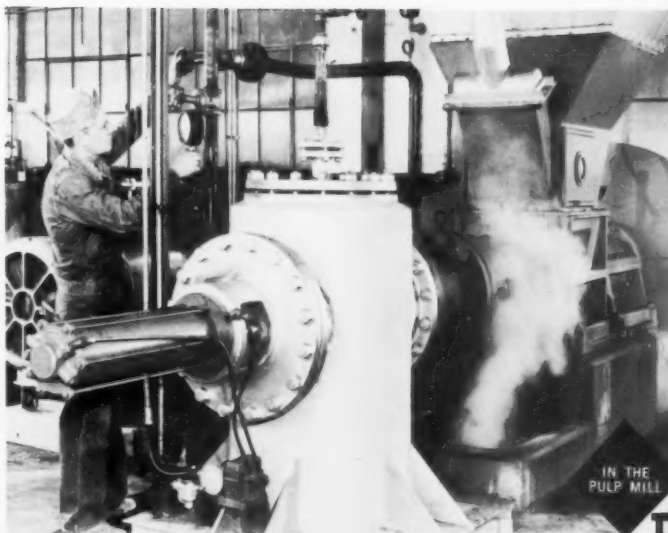
**CYANAMID**

AMERICAN CYANAMID COMPANY PAPER CHEMICALS DEPARTMENT

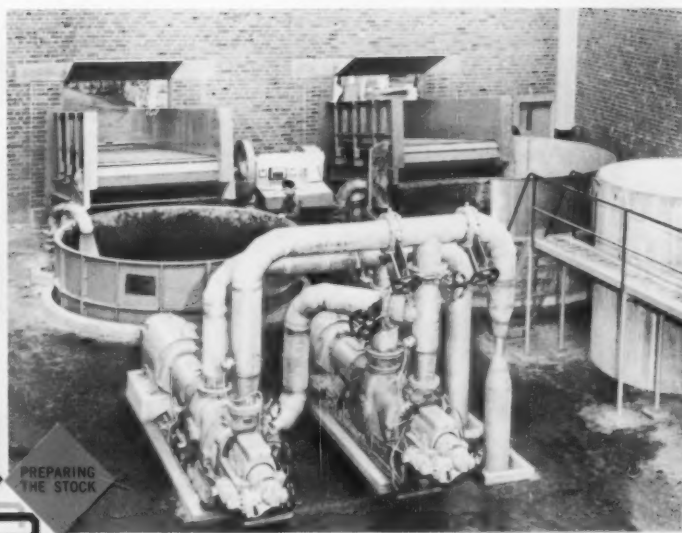
30 Rockefeller Plaza, New York 20, N. Y.

In Canada: Cyanamid of Canada Limited, Montreal and Toronto

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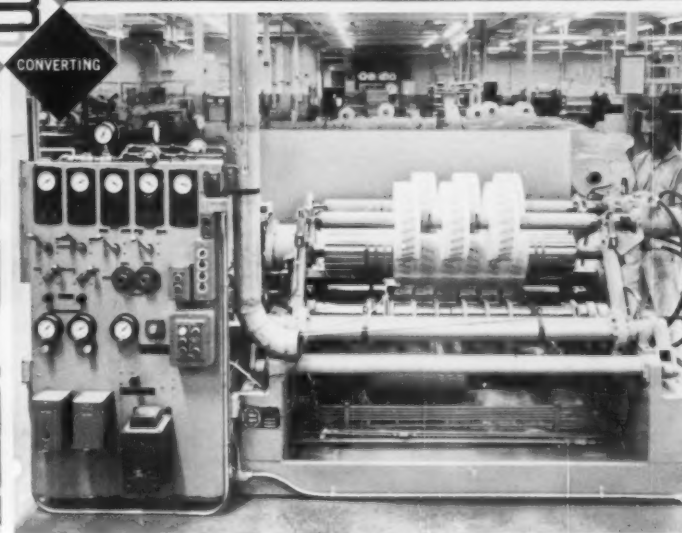
IN THE  
PULP MILL



PREPARING  
THE STOCK



FORMING  
THE SHEET



CONVERTING

**In Every Paper-Making Process . . . BLACK-CLAWSON is There**  
**. . . giving engineering assistance**  
**at every point**

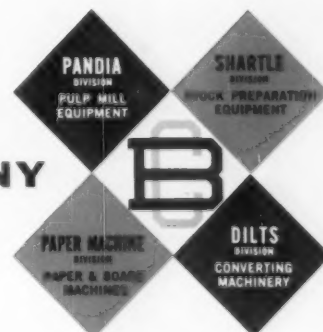
Through its four specialized manufacturing divisions, Black-Clawson provides sound engineering assistance at every point in the paper-making process, from the pulp mill to the converting line.

Only a multi-division organization, with the largest, most talented group of paper mill machinery engineers in the world, can offer complete service, work with a mill or converter on any engineering problem that may come up, on any grade from tissue to board.

Black-Clawson coordinated engineering has served the pulp and paper industry for over 100 years and will help fashion the paper products of the future.

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 Black-Clawson (Canada) Ltd., Montreal, P.Q.  
 Black-Clawson International Ltd., London, England



## The Arithmetic of Materials Handling



Fuller Airveyor, powered by diesel-driven blower, conveys wood chips from chip hopper at unloading dock to chip loft over digesters, at the Ocean Falls, British Columbia, paper mill of Crown Zellerbach Canada, Ltd.

### FULLER PNEUMATIC CONVEYING SYSTEM SPEEDS WOOD CHIP HANDLING FOR CROWN ZELLERBACH

Chips are conveyed at 67 tons an hour through 1760 ft. Fuller Airveyor® system at Crown Zellerbach Canada, Ltd. Wood chips for kraft paper production are picked up at dock-side and are sped one-third of a mile through a 16-inch pneumatic pipe line. With few moving parts, the Airveyor requires practically no maintenance. Operation of this air and moisture-tight system is unaffected by exposure to the elements.

Here is a good example of the ease with which a Fuller Airveyor conveys over long distances. The Airveyor is also a highly com-

pact and flexible system for moving almost any dry, finely-divided bulk material. The pneumatic lines turn sharp corners, run between plant floors, fit snugly into unused, overhead spaces — without disrupting existing facilities.

Fuller has specialized in pneumatic materials handling systems for more than 30 years. One or a combination of Fuller systems can be the solution to your materials handling problem. Write or call Fuller today outlining your problem. Fuller will gladly furnish additional information with appropriate recommendations.

1176  
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# Fuller

pioneers in harnessing AIR

#### FULLER COMPANY

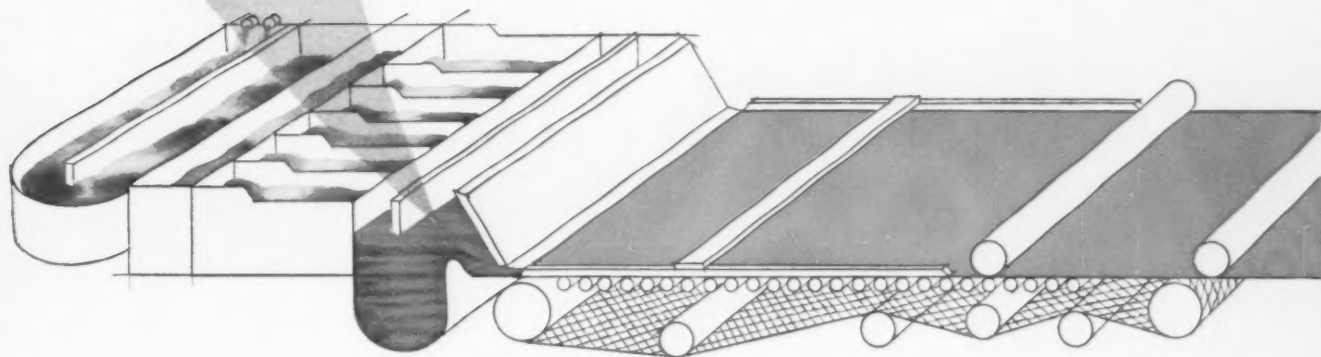
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*When you add color here—*

**you've got to be right the first time...  
every time!**



## NATIONAL<sup>®</sup> PAPER DYES

**give top performance  
in continuous dyeing!**

Specify NATIONAL PAPER DYES . . . and be sure of the unfailing uniformity you need in continuous dyeing!

Every shipment of NATIONAL PAPER DYES is tested against established standards by the most advanced photometric methods. Fastness, shade, solubility and working properties are held within extremely narrow limits.

If you are already using the new continuous dyeing technique, we will welcome an opportunity to demonstrate the outstanding results you can get with NATIONAL PAPER DYES.

If you are still in the "serious consideration" stage, we will gladly discuss the advantages of continuous dyeing and help work out formulas and procedures in your mill.

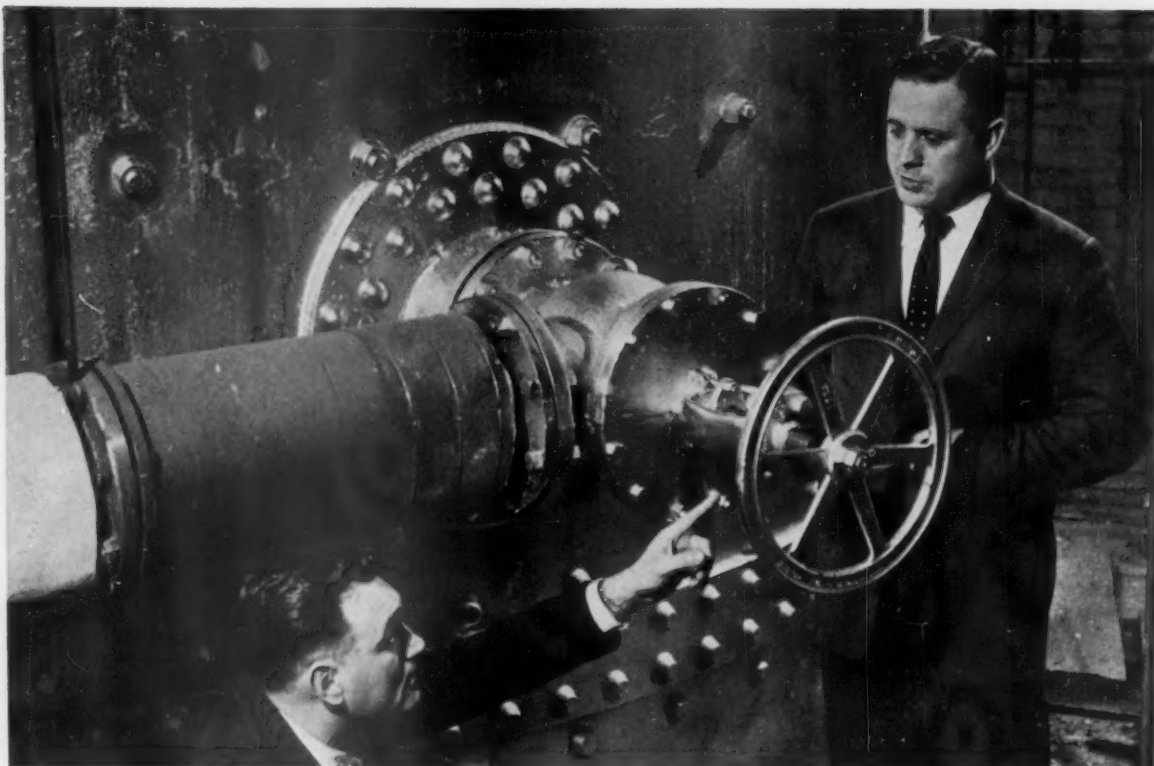
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Harold Blakney (right), Maintenance Manager, Brown Company, Berlin, N. H. Left, Frank Hiltz, Vice President Brown Wales Co., Cooper Alloy distributors, Auburn, Me. Center, Cooper Alloy 8" angle circulating valve on digest tank.

## BLAKNEY of BROWN COMPANY tells why Cooper Alloy Valves suit him

**Q.** Mr. Blakney, why does Brown Co., a leading manufacturer of pulp, paper, and other forest products, use stainless valves and fittings in its mills?

**A.** Because stainless steel is one of the few materials that can take the tough corrosion punishment of pulp mill digester fluids.

**Q.** Why Cooper Alloy valves?

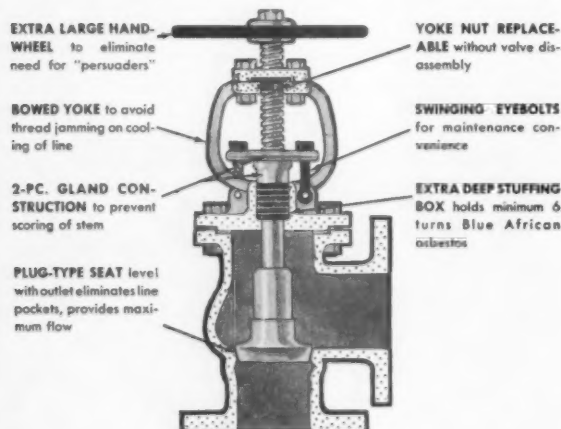
**A.** For long life and low maintenance. Over the years Cooper Alloy valves have proven themselves to be extremely well designed for the tough service we give them.

**Q.** How, specifically?

**A.** Well, these 8" angle valves, for example, have that extra-deep stuffing box to give a tighter stem seal. The seat, level with the outlet, eliminates line pockets and provides maximum flow. These plus extra large hand-wheel all give me less maintenance problems.

**Q.** Anything else you like about Cooper Alloy valves?

**A.** Yes, I like the engineering service available from Cooper Alloy we have had occasion to use, and the fine fast delivery and service we obtain from Brown Wales' nearby warehouse.



**A VALVE DESIGNED FOR STAINLESS!** The Cooper Alloy valve is not an adaptation of earlier brass and iron patterns. Cooper Alloy, with over 35 years of experience in handling stainless steel, created a valve designed to be cast in stainless! Check the Special Design Features shown at left.

As the little CA man below is saying: "You can tell a Cooper Alloy Valve as far as you can see it!" Write today for your copy of our folder "Valves and Fittings in the Pulp and Paper Industry." The Cooper Alloy distributor near you will be glad to show you the complete line of Cooper Alloy valves and fittings, and their advantages. He can serve you promptly from local stocks.

**COOPER  ALLOY**

Corporation • Hillside, New Jersey

FOUNDRY PRODUCTS DIVISION

THIRTY-FIVE YEARS OF STAINLESS STEEL PIONEERING

November 1958 — PULP & PAPER

# FINEST PAPER NAPKINS...

begin with  
Glidden Zopaque®  
Titanium Dioxide



Paper napkins and other special paper products  
look better, sell faster when pigmented with Glidden Zopaque  
Titanium Dioxide—the whitest white pigment available.

Zopaque imparts high opacity, gives maximum whiteness and brightness  
to any paper product. And the finer, consistently uniform Zopaque  
particles are readily dispersible.

Write for complete details on the grades of Zopaque specially developed for  
beater addition and coatings.



FINEST PIGMENTS FOR INDUSTRY

The Glidden Company  
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Fine quality papers depend on good  
pulp . . . good pulp depends on research.  
Tree scientists and technologists of Howard Smith Paper  
Mills are always beaver-busy producing new and better  
pulp for the paper and allied industries.  
Every year research develops ingenious new  
processes that turn a wider variety of trees into  
top quality pulp. Carefully planned forest  
conservation and scientific cutting operations,  
go hand in hand to ensure that Howard Smith will  
have a continuing supply of . . . the best in pulp!

# Howard Smith

PAPER MILLS LIMITED  
PULP SALES DEPARTMENT  
2300 Sun Life Building • Montreal 2, Canada

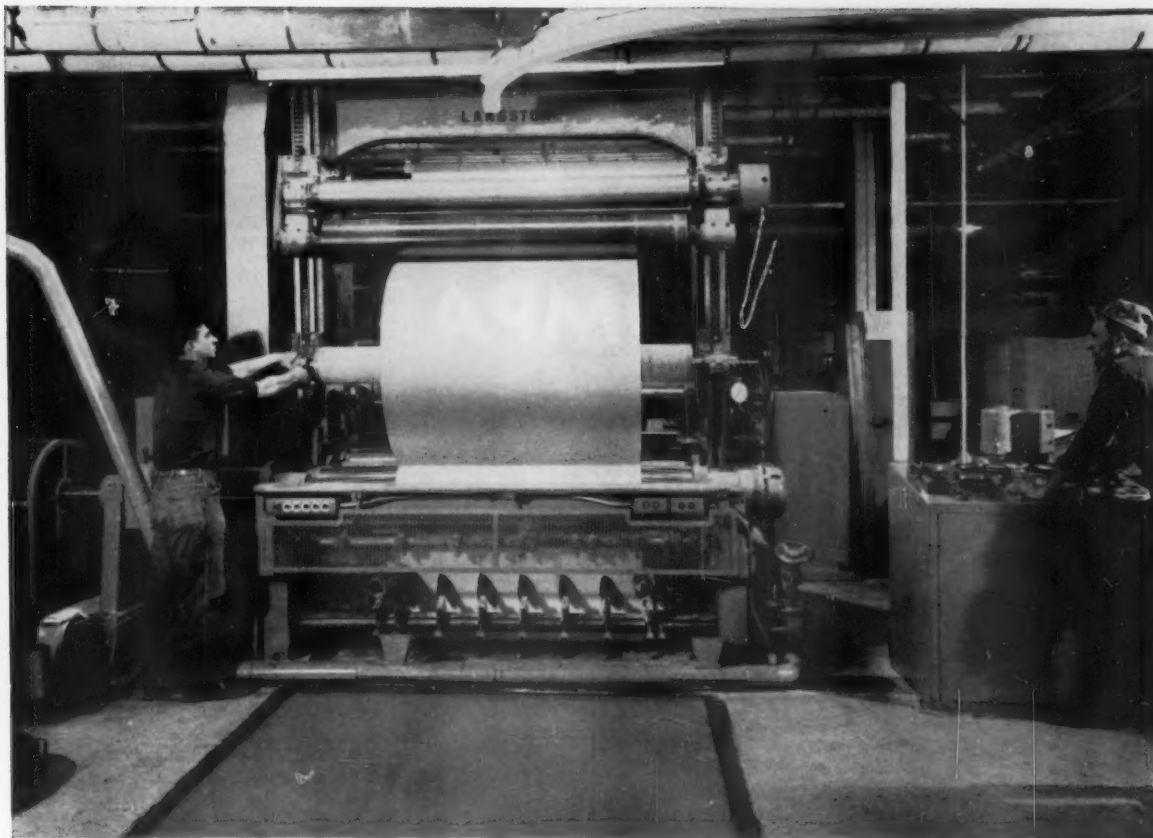
Watch for the Beaver trade-mark —  
it's your guarantee of quality!



WELL-KNOWN QUALITY PULP  
TRADE NAMES

SEAGULL Bleached Soda Pulp  
STORMONT Bleached Sulphite  
DONNACONA Unbleached Sulphite  
WINDSOR Unbleached Kraft

MANUFACTURERS IN CANADA OF HIGH QUALITY WOODPULP



New 72-inch Type CA Langston Slitter and Winder in Marathon Corporation finishing room handles rolls up to 60 in. in diameter at speeds up to 1500 ft. per minute. Finished rolls are lowered by hydraulic drop shown in foreground.

## New Langston Slitter and Winder helps Marathon cut operating costs

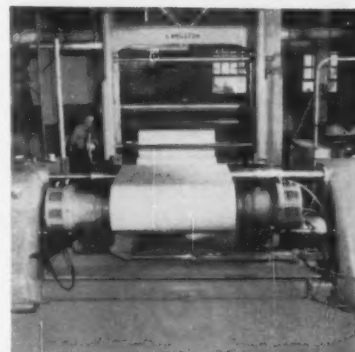
This new Langston Slitter and Winder installation at Marathon Corporation's Rothschild, Wis., mill is already helping the company cut costs and speed processing of quality paper and board.

For example, the power-operated shaftless unwind stand virtually loads itself. No crew is needed to bull heavy shafts into place. And the Langston hydraulic roll ejector permits 1-man removal of finished rolls. These two features alone are saving Marathon several thousand dollars a year. Water-cooled Wichita-type air brakes can be operated from control console.

Besides effecting major operating economies, these Langston machines

also pay off in higher quality rolls. The hydraulic rider roll control, for instance, automatically keeps nip pressure constant, regardless of the diameter or weight of the rewound roll. This insures rolls of uniform density with reduced tendency toward wrinkling or telescoping. The shear-cut slitters cut like scissors instead of a knife, shearing cleanly and keeping paper dust to a minimum. The resulting clean-edged, dustfree rolls are easier for customers to process.

Learn how you can benefit from the advantages of Langston Slitters & Winders. Write SAMUEL M. LANGSTON Co., 6th & Jefferson Sts., Camden 4, N.J.



Langston Shaftless Unwind Stand eliminates the time-consuming, back-breaking task of hoisting heavy shafts into place. The hydraulically actuated arms reach out, pick up the roll and lift it to running position—a 1-man, push-button operation.



# LANGSTON

*Leadership by design*

...Now is the time to

# COMPARE

the proven  
quality of the  
fabri wafer  
stock valve  
with the  
exclusively  
patented  
stuffing  
box  
to **ANY**  
stock  
valve...



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In every test . . .  
your paper finish meets specifications exactly  
**with Clinton Products**

For your paper finish, you can be sure of highest strength, efficient coating and desired penetration with Clinton products from corn. These ingredients—starches and dextrins—produce the same results every time, because:

**CONSISTENT FORMULATION MAKES  
CLINTON PRODUCTS RELIABLE**

Three analytical control laboratories and several single-purpose testing stations are located at strategic

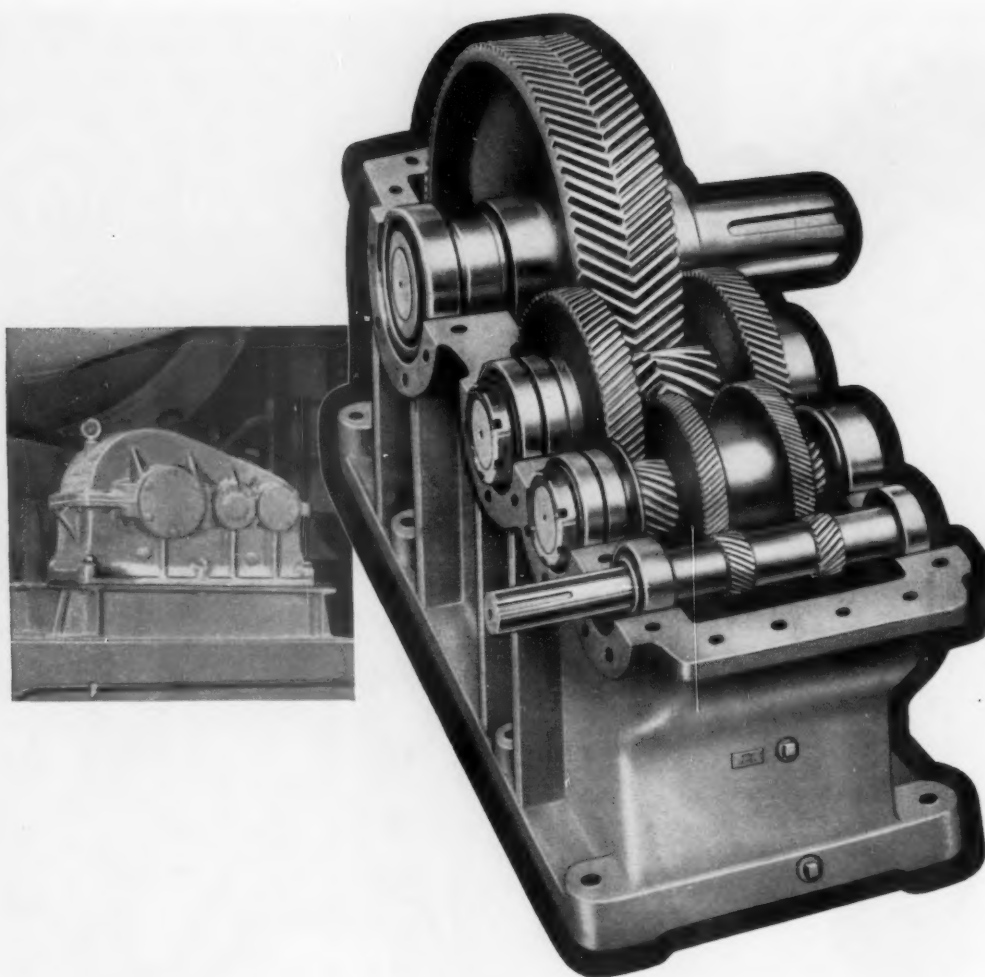
points in our plant. They check every stage in the processing of *all* products . . . they check *all* finished products to be sure specifications are met exactly. That's why you can depend on Clinton products to do the job for which they are needed.

Your Clinton salesman can help you select the right products to make the finish you want. And, should you need special production advice, *prompt* technical service is available when you need it. Call your Clinton salesman today, or write:

**CLINTON CORN PROCESSING COMPANY  
CLINTON, IOWA**



*...Where research today  
improves tomorrow's product*



## THE HEAVIER THE LOAD...THE MORE YOU NEED PHILADELPHIA HERRINGBONE REDUCERS

Heavy repeated shock loads... high horsepower... round-the-clock operation... put them together and you have the kind of a job where Philadelphia Herringbone Reducers perform best. They will last longer and save your maintenance dollars because extra strength is built into every part... housings, shafting, bearings and gearing.

To be specific:

Housings are specially reinforced at points of greatest stress. Extra heavy bearings take shocks and heavy overhung loads in stride. Result: shaft alignment is accurate... and it stays accurate. Gears, pinions and bearings last longer.

To meet the specific needs of each application, gearing is specially designed and symmetrically arranged

in the housing. Result: the bearings on each shaft carry equal loads, shaft deflections are minimized, bearings and gearing have higher shock load capacity.

Pound for pound, horsepower for horsepower and dollar for dollar, you can't buy a herringbone reducer that will outlast a Philadelphia. They are designed with *your* heavy duty drive problems in mind... so that you will never have a drive problem.

Philadelphia Herringbone Reducers are available in single, double and triple reduction for ratios of 1.75:1 to 292:1. Write today for your copy of Catalog H-55.

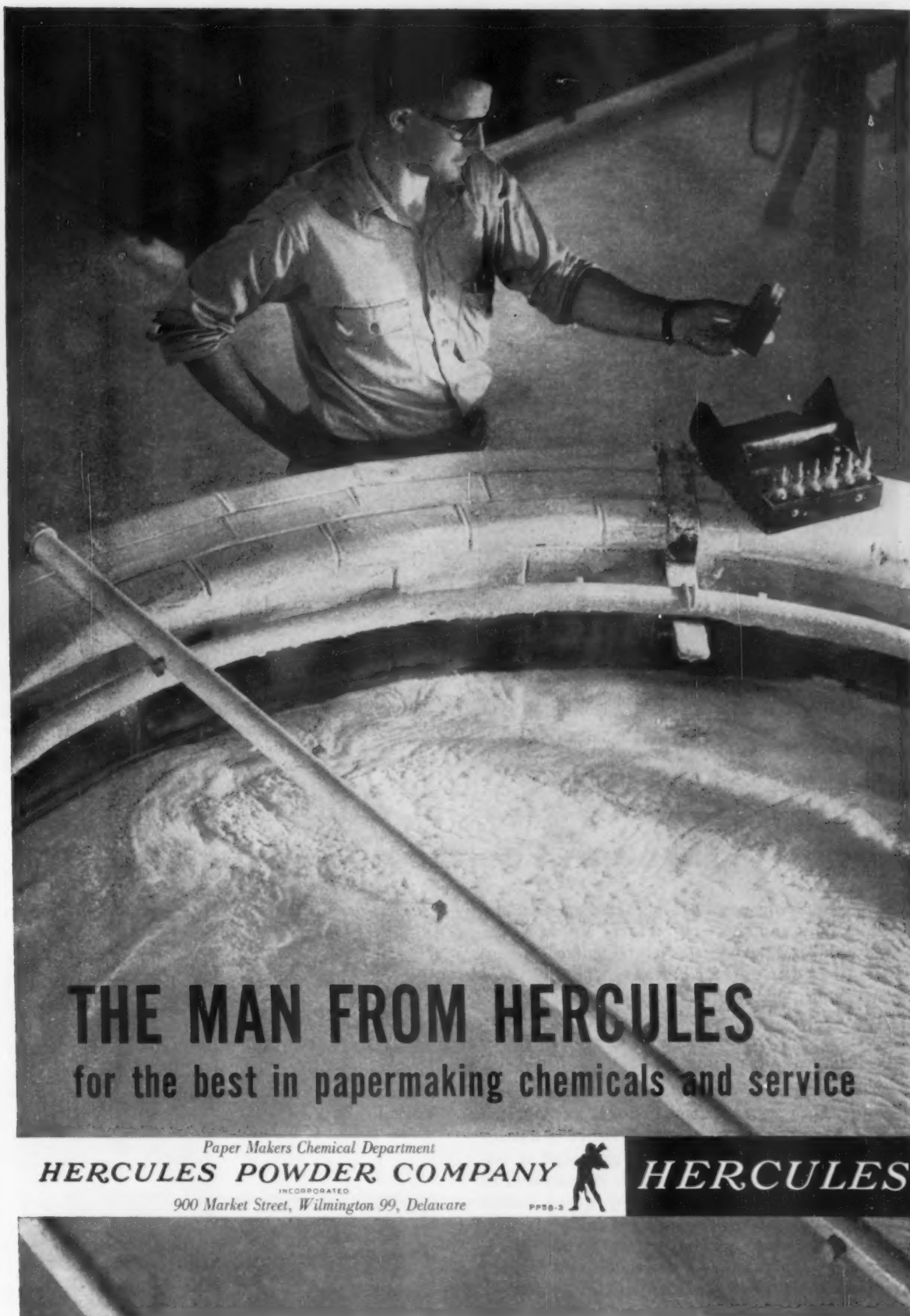
### PHILADELPHIA GEAR CORPORATION

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# philadelphia gear drives

Offices in all Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.


INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS



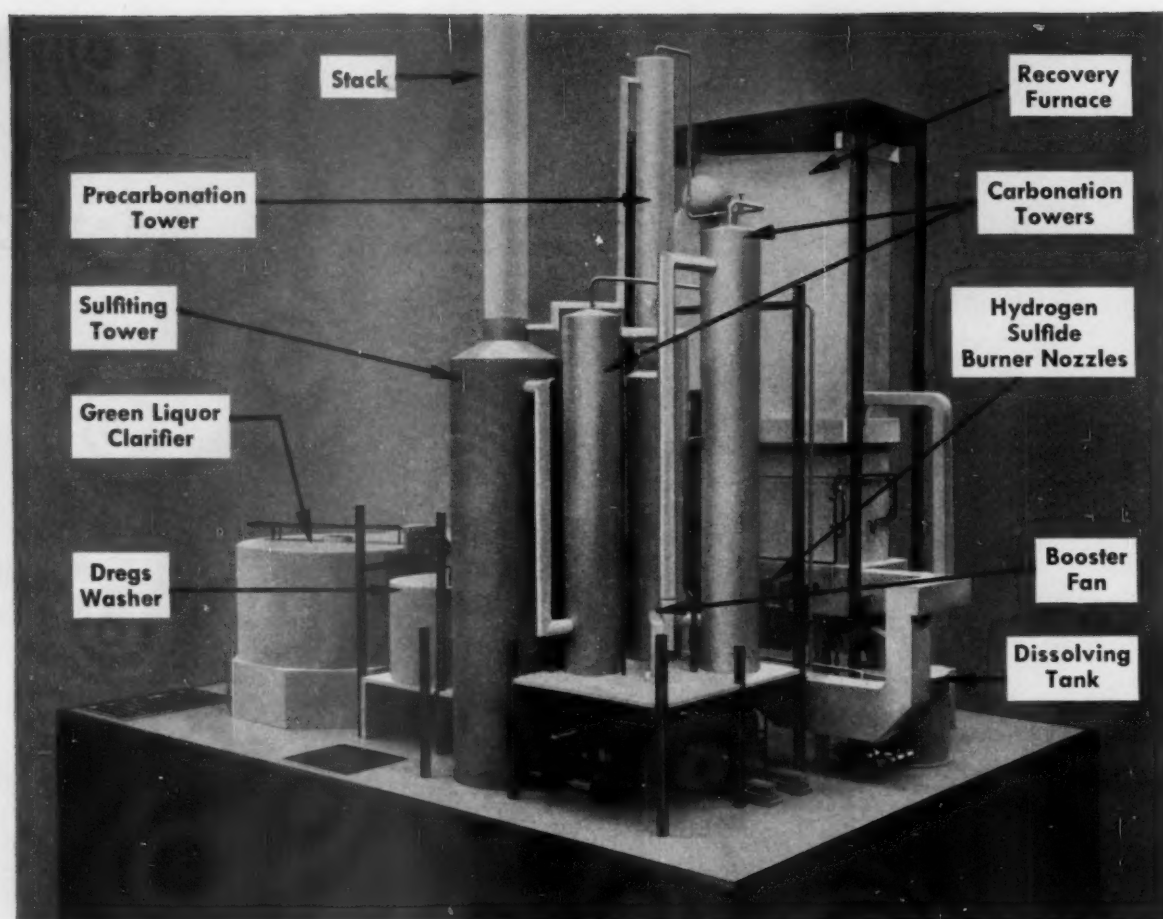
**THE MAN FROM HERCULES**  
for the best in papermaking chemicals and service

*Paper Makers Chemical Department*  
**HERCULES POWDER COMPANY**  
INCORPORATED  
900 Market Street, Wilmington 99, Delaware

**HERCULES**

PPS-2 





B&W Recovery System for neutral sodium sulfite pulping, represented by this model, is capable of processing the waste liquor resulting from the production of 250 tons of NSSC pulp per day.

## B&W Reduces NSSC Pulping Costs Through Chemical Recovery

Reduced pulping costs through efficient and economical heat and chemical recovery are made possible with B&W's complete Neutral Sulfite Recovery System, based on the Mead Process.\* This fully integrated liquor preparation and recovery system has proved commercially sound. One unit is being operated successfully and a second, and much larger unit, is under construction.

Briefly, the B&W complete NSSC process works like this: The recovered black liquor is concentrated in multiple-effect evaporators and burned in a kraft-type recovery furnace. The smelt produced is dissolved to form green liquor which is processed in carbonation towers to liberate hydrogen sulfide from sodium sulfide. The sodium sulfide is thus converted into sodium carbonate and sodium bicarbonate. Hydrogen sulfide is returned to the furnace and burned to sulfur dioxide, which is absorbed by the carbonated liquor in a sulfiting tower. The

liquor leaving the sulfiting tower is delivered to digesters for cooking purposes.

The development and successful application of this *complete* Neutral Sulfite Recovery System is another example of B&W's continuing efforts to provide better and more economical recovery operations for the Pulp and Paper Industry. For further information, write The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

\*Process patented by The Mead Corporation

P-814



WHEN YOU SMOKE



Make  
Peace  
*with the*  
Forest



WEYERHAEUSER

Prevent  
Forest  
Fires!

# chemurgy

formerly a division of

The Glidden Company...now a division of

**CENTRAL SOYA COMPANY, INC.**  
FORT WAYNE, IND.

**No change in products** — Alpha Protein, the soybean derivative first commercially isolated by Chemurgy Division, is the same high quality coating adhesive that paper manufacturers depend upon for improved product and better, more economical production.

**No change in policies** — Chemurgy continues to offer the same specialized attention to research, development and technological problems through its Customer Service Laboratory.

**No change in personnel** — The men you have learned to count on for creative help, are still with Chemurgy:

Walter M. Bain; Ray A. Olson; Davis Schroeder; Joseph F. Voit; Ralph I. Wicker.

**No change in location** — Chemurgy Division headquarters continue to be at 1825 North Laramie Avenue, Chicago 39, Illinois. Inquiries and orders directed to us will receive prompt attention.

"With the transfer to Central Soya Company, Inc., we want to express our appreciation to you, our customers, for the business with which you have favored us. It is our sincere hope that we may continue to merit your confidence and supply your needs for our products."

*W. M. Bain*  
Sales Manager  
Industrial Protein

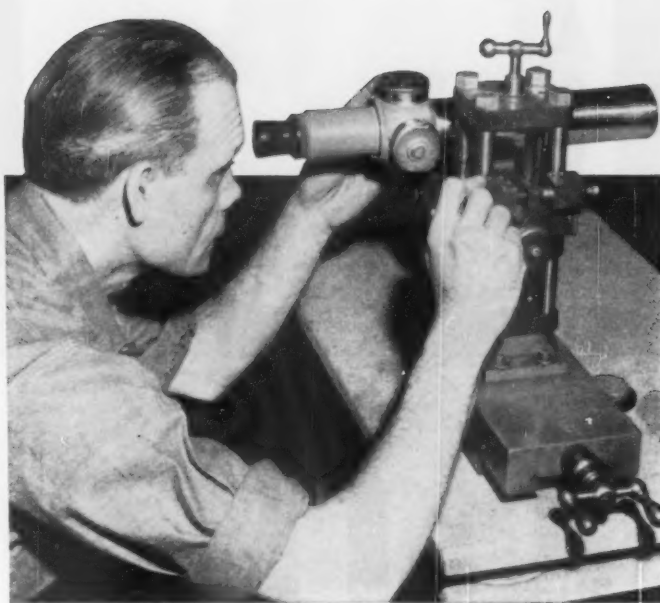
**CENTRAL SOYA COMPANY, INC.**

CHEMURGY DIVISION • 1825 North Laramie Ave., Chicago 39, Illinois



Building the  
skill of  
experience  
into

## LODDING DOCTORS...



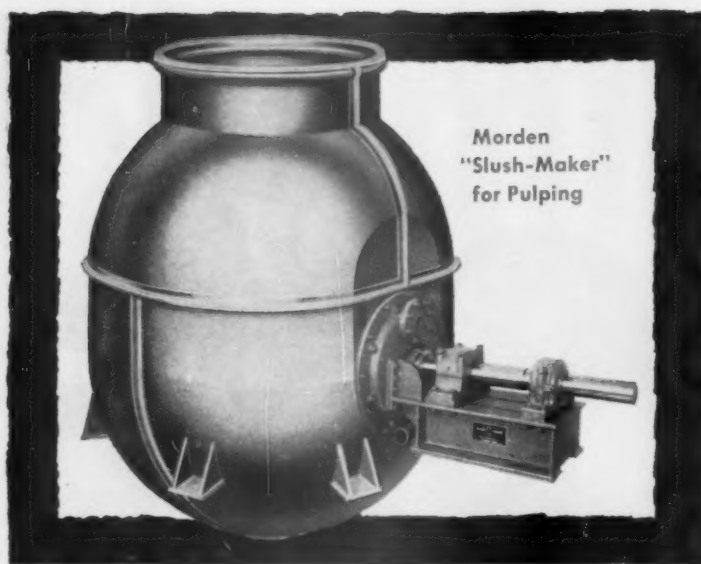
**Herbie Mattson** has inspected 10,000 doctors.

Through his alignment telescope, Herbie has peered at these doctors, making sure that each one comes within the critical tolerances necessary for good doctoring. Any deviation from Lodding's high standard is immediately detected. It is because of such meticulous care as this that Lodding is able to guarantee the fit necessary for satisfactory operation of Lodding Doctors.

The high performance which everyone expects and receives from Lodding Doctors is the result of the care and experience of the team producing them. This is an asset which only comes in specializing in doctors over the years.

During the last ten years, Lodding has made more than 10,000 doctors, 17,000 blade holders and 350,000 blades. Lodding shares this experience with you.

**LODDING ENGINEERING CORPORATION**  
WORCESTER, MASSACHUSETTS



Morden  
"Slush-Maker"  
for Pulping



# MORDEN

**SPECIALISTS IN  
STOCK PREPARATION  
EQUIPMENT**

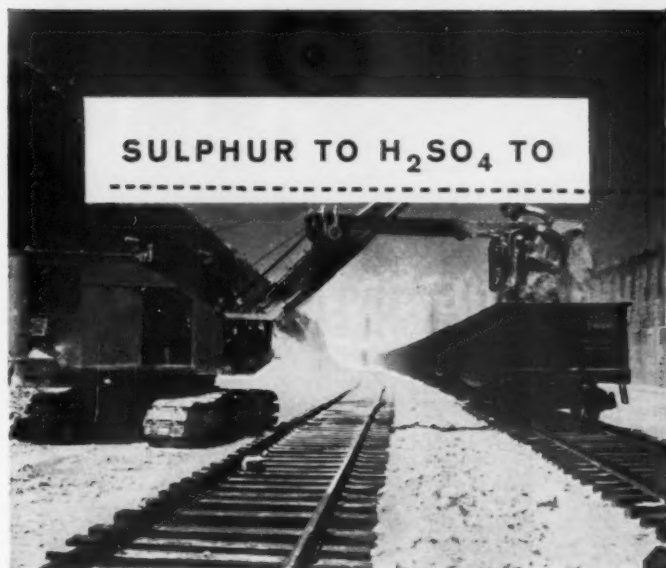
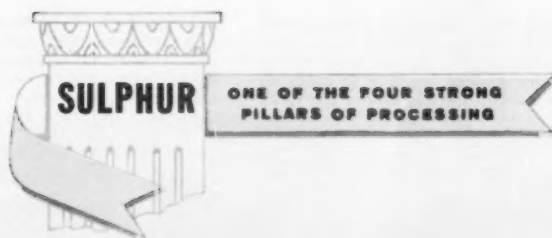


Morden "Slush-Maker" for Pulping  
Interested in higher quality production—  
worthwhile savings in power and labor?  
The Morden catalog can give you the  
answers. Send for your copy today...  
ask us to visit you for an in-the-mill dis-  
cussion of your requirements.

## **MORDEN MACHINES COMPANY**

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UNITED STATES REPRESENTATIVES—**Northeast:** Orton Corporation, Fitchburg, Mass.;  
**Midwest:** Dan B. Chapman, Appleton, Wis.; **South:** Brandon Sales, Inc., Greenville, S. C.



- 29% Fertilizer**  
(Superphosphate;  
ammonium sulphate)
- 21% Chemicals**
- 9% Petroleum**
- 7% Paint & Pigment**
- 5% Steel**
- 4% Rayon**
- 2% Others**

Tinker to Evers to Chance . . . Those of us with gray hair remember well that sure-fire, double play combination of the old Chicago Cubs.

Sulphur, too, is playing the major role in many an industrial 'double play'. With Sulphuric Acid as the keystone derivative, Sulphur is serving six major processing industries with big tonnages and countless others requiring smaller tonnages.



*In this connection, the following statistics may be of interest:*

The sulphuric acid industry consumes 82% of all elemental sulphur and its equivalent produced in the States. Of this 82%, about two-thirds comes from Frasch Process Sulphur and from the treatment of natural sour gas. The balance is from pyrite, roaster gases, recycling of spent acids, etc.

Texas Gulf, the leading producer of Frasch mined and sour gas Sulphur, has always been and will continue to be industry's reliable source of supply. Recently, a new mine in Texas came into production. Other developments both in mining and sour gas-treatment are nearing completion. To broaden its service to users of Sulphur, Texas Gulf recently

inaugurated shipments of molten Sulphur. Distribution centers are being set up.

To be a leader in industry, a company must give service and develop in anticipation of needs. This role, Texas Gulf Sulphur will continue to play to the best of its resources and ability.

SULPHUR PRODUCING UNITS

- Newgulf, Texas • Spindletop, Texas
- Moss Bluff, Texas • Worland, Wyoming
- Fannett, Texas



**TEXAS GULF SULPHUR CO.**

75 East 45th Street, New York 17, N. Y.  
811 Rusk Avenue, Houston 2, Texas



Fabricas de Papel Tuxtepec's newsprint mill is located 250 miles southeast of Mexico City. The air-conditioned pulp and paper mill is laid out for straight line flow of materials from the woodyard to the finished newsprint

shipping dock. Wood preparation facilities and the steam and power plant adjoin the mill. A modern housing community for mill operating personnel comprises nineteen homes and a club house.



**NEW MILL**

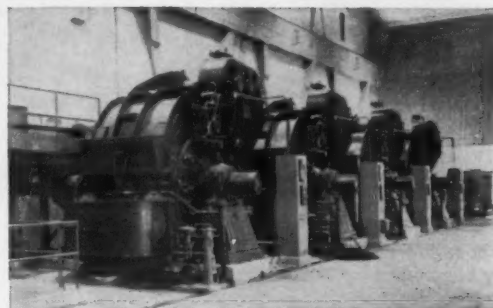
## PRODUCES HALF THE NEWSPRINT NEEDS OF MEXICO

Mexico's first newsprint mill is now in operation and is producing 100 tons of newsprint daily, from local pine. The entire \$12,000,000 project—planning, financing, construction, equipment and initial operation—was handled by the Parsons & Whittemore-Lyddon Organization.

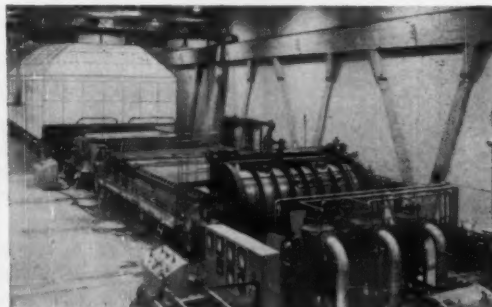
With more than 100 years experience in pulp, paper and machinery...with manufacturing facilities on three continents...and with engineering and financial associates throughout the world, we can render *any* or *all* of the following services:

1. *Conduct* a thorough technical and economic field survey and prepare a complete appraisal report.
2. *Assist* the local group in financing the project.
3. *Design* the complete project in cooperation with the world's leading consulting engineers.
4. *Produce* and deliver all pulp and paper making machinery and other equipment which is not locally available.
5. *Supply* skilled personnel to ensure efficient operation until the local staff has been trained.
6. *Cooperate* in the procurement of foreign raw materials and in the sale of the mill's output on world markets through our own branches.

For full information on our services, write to Parsons & Whittemore, Inc., 250 Park Avenue, New York 17, N. Y.



All equipment for Tuxtepec was supplied under a global contract by the Parsons & Whittemore Organization. Four Roberts Grinders, each with a 3000 horsepower, 257 rpm motor, were manufactured by the Black Clawson Co., Pandia Division, Hamilton, Ohio.



Black-Clawson also built the newsprint paper machine with its three Selectifier screens, pressurized headbox, 185 inch wide cantilever Fourdrinier followed by two suction presses and a 38 unit dryer section.

### THE PARSONS & WHITTEMORE / LYDDON ORGANIZATION

*Builders of Pulp and Paper Mills using locally available fibers*

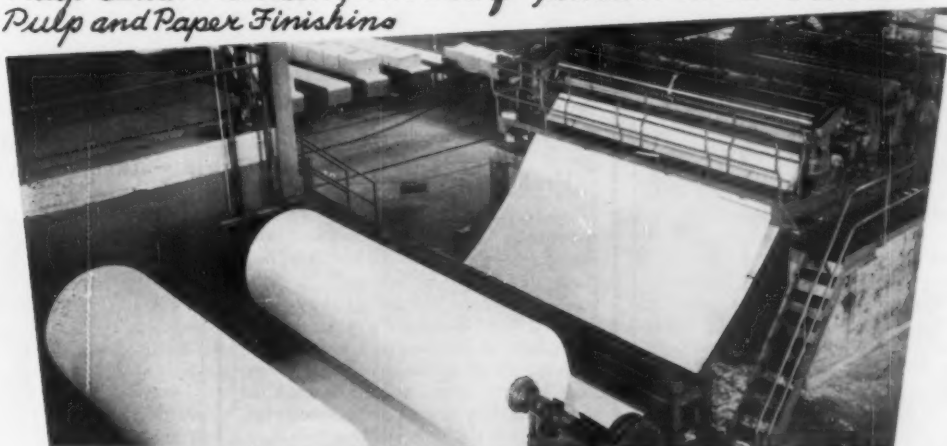
250 Park Avenue, New York 17, N. Y.



18-19 Savile Row, London W.1., England

*Pulp*  
*Paper Sheet*  
*Pulp and Paper*  
*Bale Finishing Systems*  
*Pulp Cutters and Layboys*  
*Paper AIRFLOAT Conveyors*  
*Roll Wrapping and Handling*  
*Pulp and Paper Roll Finishing Systems*  
*Paper Layboy....Pulp AIRFLOAT Conveyors*  
*Roll-Core Handling..... Paper Cutters*  
*Sheet-Finishing Systems....Pulp and Paper*  
*Roll Unwinding..... Roll Banding..... Wrapping*  
*Paper Roll Finishing Systems.....Pulp Roll Finish*  
*Plywood and Veneer Hogs... Pulp Bale Handling System*  
*Pulp Stack Handling..... Scarf Jointers and Presses*  
*Pulp and Paper Finishing*

*Outstanding*



**IN PULP FINISHING SYSTEMS**

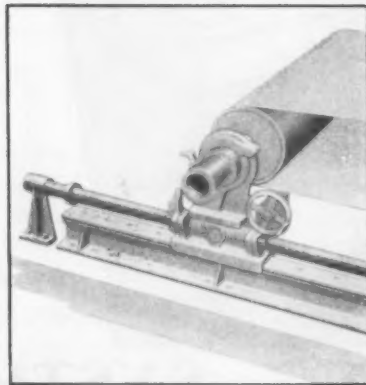
**LAMB-GRAYS HARBOR CO., INC.**

Hoquiam, Washington, U.S.A.



# Is your Press Section a limiting

**MODERNIZATION  
WITH PROVED BELOIT UNITS  
...CUTS OPERATING COSTS  
...INCREASES OUTPUT  
...IMPROVES QUALITY**

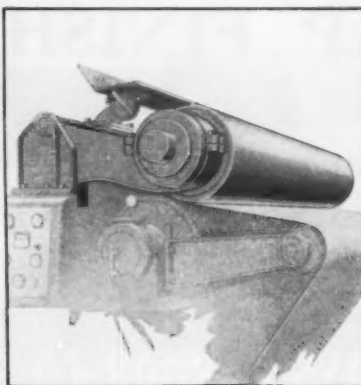


## **Felt stretch under positive control?**

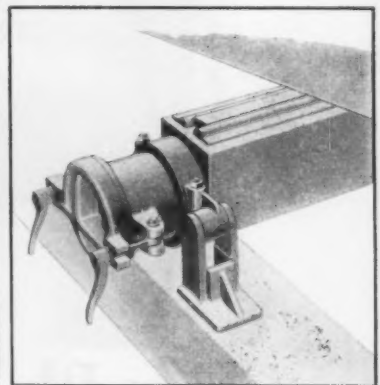
Heavy-duty Beloit felt-stretchers combined with felt tension indicators provide positive control of felt tension and stretch. Optimum felt stretch can be maintained from shift to shift, day to day. Felt life and drainage can be increased—felt guiding is more positive. Seam-straighteners are an integral part of Beloit felt-stretchers. Air motor operators are available for both stretchers and seam-straighteners.

## **Press crowns a problem?**

If so, consider stiffened, rugged Beloit press rolls. Bolted heads coupled with Beloit heavy-wall design result in uniform deflection as opposed to press rolls with cast heads. Heavy-duty antifriction bearings are protected from loss of lubricant or entrance of moisture. Call on Beloit for grey iron, ductile iron, or granite press rolls for dependable service at press, size press, breaker, or wringer roll positions.



PATENTED



## **Felts filling up?**

Many mills have found Beloit felt suction boxes a profitable answer to longer felt life and improved sheet quality. A Beloit felt suction box and shower arrangement provides full-width continuous cleaning—keeps felts clean and open. An adjustable slot width supplies just the right amount of vacuum for the specific application. A low-cost addition that can keep felts cleaner—longer.

**PROVED BELOIT UNITS FOR THE PRESS SECTION: FELT ROLLS  
PAPER ROLLS • SAVEALLS • PRESS DOCTORS • DIAPHRAGM  
LOADING UNITS • SHOWER ARRANGEMENTS • MARKING EQUIPMENT**





ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS

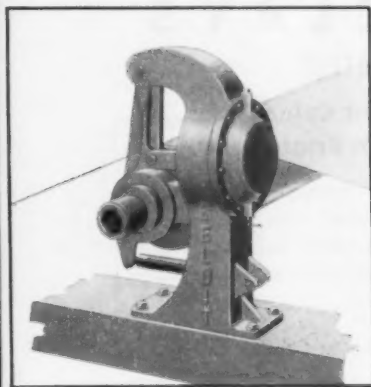
# factor in your production picture?

Modernize your press section with proved Beloit units. Components for the press section of your paper machine shown here have proved to be of special value in increasing output, improving quality, reducing machine downtime, and cutting

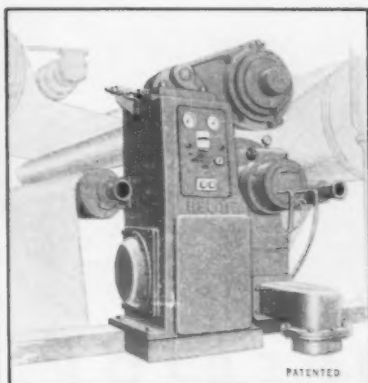
operating costs. A Beloit press arrangement is available for every paper machine application. Let Beloit sales engineers show you the best press design for your machine. Their suggestions can pave the way to greater profits.

## Felts running off periodically?

A felt lost due to guide failure can cost more than a new Beloit air diaphragm felt guide. Why not modernize with a low-cost Beloit automatic felt guide now? The patented Beloit air diaphragm guide moves the guide roll smoothly and efficiently. Its rate of response is independent of felt speed — its outside power supply reduces felt edge wear. The entire mechanism is simple, foolproof, rugged—no small parts subject to easy damage. Models available for every press application.



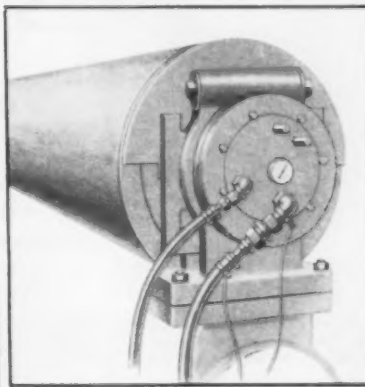
PATENTED



PATENTED

## Speed limited by drying capacity?

Get maximum sheet dewatering at minimum cost with Beloit suction rolls. Machines can run better at increased speeds and with improved operating efficiency—and a dryer sheet entering the dryer section. There's a Beloit suction roll for every press section application: suction press, suction pick-up, suction pressure, suction transfer, suction felt, suction wringer, or suction hot press.



PATENTED

## Heavyweight sheets a problem?

The Beloit hot press is doing a fine job on machines running heavyweight grades. The hot press dewateres the sheet after it has been raised in temperature, resulting in greater water removal and a dryer sheet to the main dryer section. The Beloit hot press arrangement may be employed as a plain hot press or a suction hot press depending upon your requirements. When used as a suction press, the hot press employs the unique Beloit air-bleed principle.

» **ACT!** Write for facts  
—or let a Beloit Sales Engineer show  
you how to modernize your Press Section.  
Beloit Iron Works, Beloit, Wis.



**BELOIT**  
PAPER MACHINERY

*your partner in papermaking*

© 1958 BELOIT IRON WORKS

# Thiele Kaolin



## SUPERIOR CLAYS for FILLING or PAPER COATING

- Controlled Particle Size • Excellent Color
- Standardized Low Viscosity • High Brightness

Thiele Water-Washed Clays are mined from vast holdings in the heart of Georgia's clay belt, carefully tested and controlled while being processed at Thiele's modern plant. Two spray drying plants assure coating clays that will provide EASIER MAKE-DOWN—IMPROVED HANDLING—LOWER MOISTURE CONTENT—MORE UNIFORMITY.

Illustrations show particle size testing and core testing—in Thiele laboratory.

Write for full information and sample of Thiele Kaolin Coating or Filler Clay for your particular use.

### *Thiele Kaolin Company*

P. O. BOX 270 • SANDERSVILLE, GA.

# LOBDELL

roll grinders for every purpose . . .

- CHILLED IRON ROLLS
- MACHINE CALENDER STACKS
- ROLL GRINDING MACHINES
- ROLL CALIPERS
- KNIFE GRINDERS
- ABRASIVE CUT-OFF SAWS

The latest 48" Type C. W. Lobdell Roll Grinder with 30 1/2" bed, equipped with variable speed drives, will handle rolls up to 48" diameter, and with a face length of 270"—The Grinder shown below was recently installed at the Hollingsworth and Whitney Division of Scott Paper Company, Mobile, Alabama. Write for details of our latest design.



**UNITED**  
ENGINEERING AND FOUNDRY CO.  
948 FORT DUQUESNE BOULEVARD  
PITTSBURGH, PENNA.





SPROUT-WALDRON

Pointers

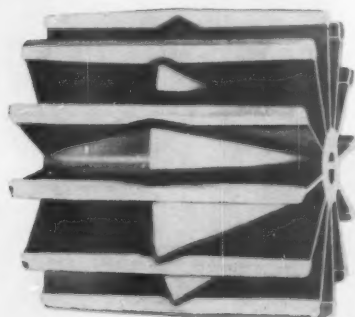
Refiners • Digesters • Conveyors • Feeders  
Screens • Drainers • Pelleters • Presses • Stock Proportioners

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Penna.

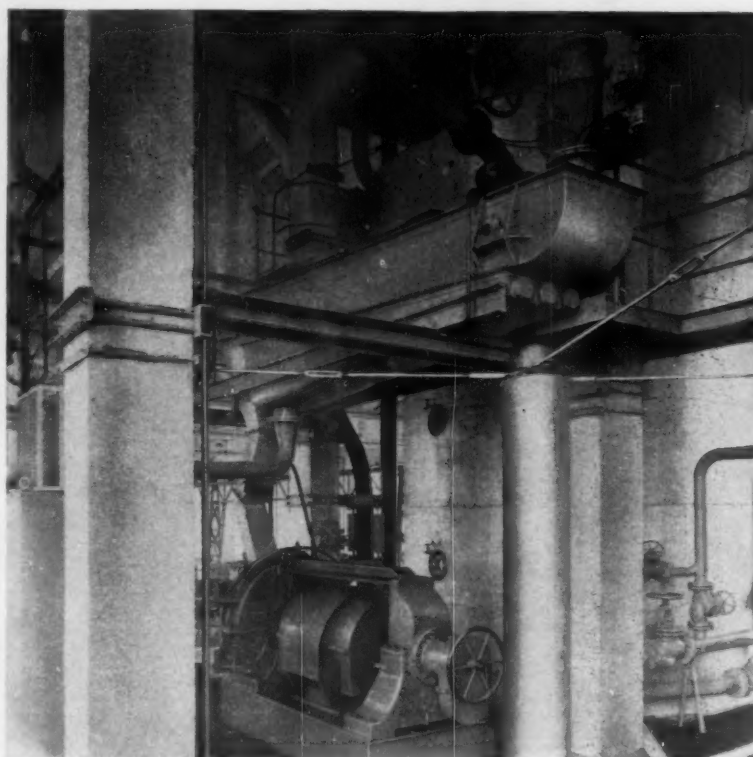
## Stretch Your Conveyor Dollars With Sprout-Waldron Belt Saver® Pulleys

With maintenance costs at an all time high it is worth taking a careful look at the famous Sprout-Waldron Belt Saver® Pulley which has proven its ability to increase conveyor belt life from 50-400%. These cast iron wing and cone quality pulleys prevent crushing of the material between the face of the pulley and the bottom side of the belt. Sharp lumps and abrasive materials slide away from the pulley adding years of service life to the belt. Whether you are handling crushed stone, sand, asbestos, soda, limestone, cupola slag, salt, fertilizer, concrete, gravel or any other abrasive or difficult to handle material, Sprout-Waldron Belt Saver Pulleys can extend the life of your conveyor belts or bucket elevators and minimize your shut-down and maintenance costs.

Ask for your copy of Bulletin 35-D.



*Sprout-Waldron Belt-Saver® pulley increases conveyor life and cuts operating costs.*



*Photo shows Sprout-Waldron Rotary Valve, Flatbed Drainer and 36-2 Refiner in Italy's first semichemical pulp mill.*

## ITALY'S FIRST SEMI-CHEMICAL MILL

The new SAFFA pulp mill, Italy's first semichemical mill, is producing paper and board using large percentages of bleached semichemical pulp made from local poplar veneer waste. Capacity is set at 30 tons a day of unbleached semichemical or 20 tons a day of single stage bleached dry pulp.

Two mild steel rotary digesters were originally specified. As a result of excessive corrosion, the digesters were lined with stainless steel. This too, has proved unsatisfactory. Metallizing with stainless steel is going to be tried as a possible solution.

After digesting, the chips are

pumped to the refiner installation. A 10" x 14" Sprout-Waldron rotary valve meters the chips to a Sprout-Waldron No. 24 drainer and a 300 hp Sprout-Waldron 36-2 refiner. The refined pulp is then screened and pumped to a surge chest and then to a cleaner. Washing after screening is proving unsatisfactory due to loss of black liquor and foaming. Current plans to remedy this include installation of a Sprout-Waldron/Anderson press and refiner system.

For complete details on this SAFFA installation at Magenta, Italy, ask for Bulletin 43.

PP/104

TOM BIGBEE SAYS:

**THERE'S A NEW  
PRODUCING  
MILL ~~A-BUILDING~~  
AT NAHEOLA!**



**MARATHON SOUTHERN IS  
"OPEN FOR BUSINESS"!**

Mark the date: August 10th, 1958 . . . note the time: 2:55 p.m. At that moment the very first pound of Naheola pulp was made. The first pound of thousands of tons to come! And a tired but jubilant crew and staff said this first "cook" of unbleached pulp was of excellent quality. More work and more worry and then, about 30 days later, the all-modern bleaching plant went into operation and we saw the first bleached pulp from Naheola. The big No. 1 paper machine is also working and making very satisfactory commercial runs.

Yes, Marathon Southern is surely open for business. Naheola produces high-grade pulp—either hardwood or softwood. Carefully trained Marathon Southern people are operating the newest pulp-making equipment, completely geared for quality control. Good transportation from Naheola, Alabama, to paper mills all over the country insures service and deliveries as needed. Marathon Southern is open for service to America's paper industry.

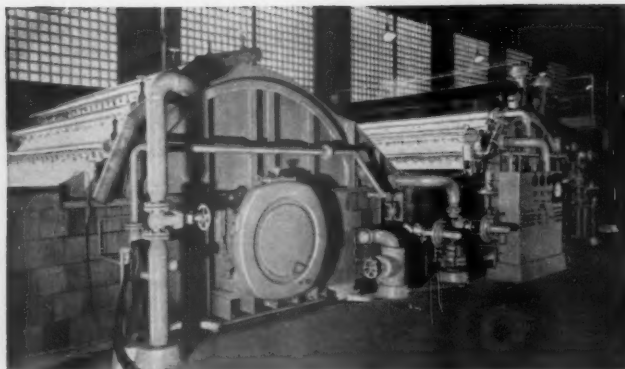
**Where is Naheola? Just 50 miles due east of Meridian, Mississippi . . . 110 miles due west of Montgomery, Alabama . . . right on the Tombigbee River.**

**MARATHON SOUTHERN CORPORATION**  
Naheola, Alabama (P. O. Butler, Alabama). A subsidiary of:

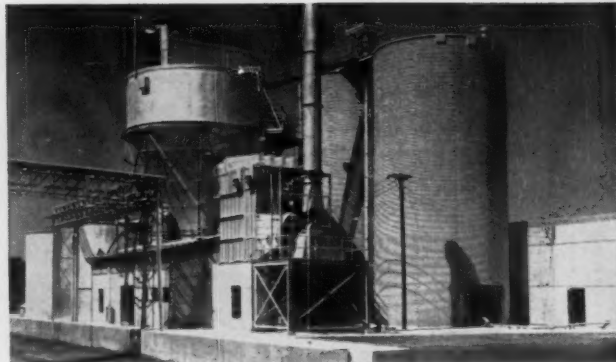
**MARATHON**

A Division of American Can Company  
MENASHA, WISCONSIN





**PULP WASHING IN STAINLESS STEEL** safeguards quality, keeps costs in line and assures continuous, profitable production at Puget Sound Pulp and Timber Company, Bellingham, Washington. Stainless chlorination and hypochlorite washers in the company's bleach plant provide high resistance to corrosion. Stainless resists scaling at high temperatures. Possesses high creep strength. Shrugs off abrasion. Takes stress and vibration in stride. No other common construction material matches stainless for its combination of qualities and physical properties so essential to the mechanical and chemical stages of pulp processing.

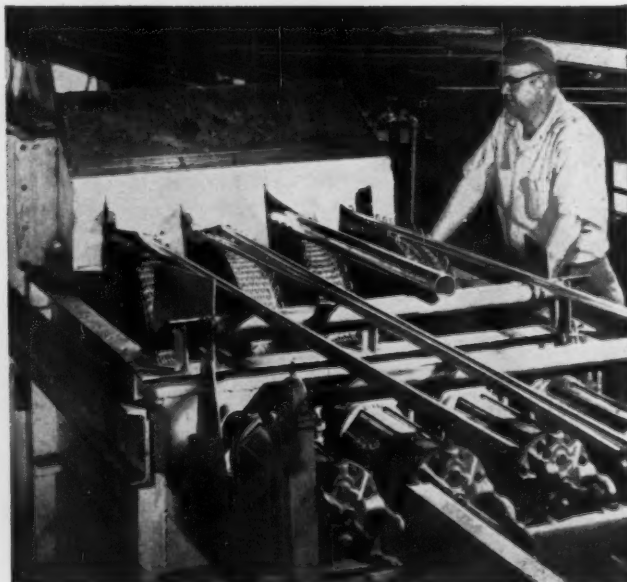


**SPRAY DRYING IN STAINLESS STEEL** protects the quality and purity of Kaolin paper coating clays at Thiele Kaolin Company, Sandersville, Georgia. A cake clay slurry containing 40% moisture is pumped into the stainless dryer, where it is flash dried in about a second. The resulting product comes in contact only with stainless steel so that it maintains quality and purity at the highest level. There's no danger of metallic contamination. ENDURO is inert to most chemicals and chemical compounds. It never adds unwanted elements to products. Never takes anything away. Stainless equipment is an investment in long-range savings.

## STAINLESS STEEL—Pulp and

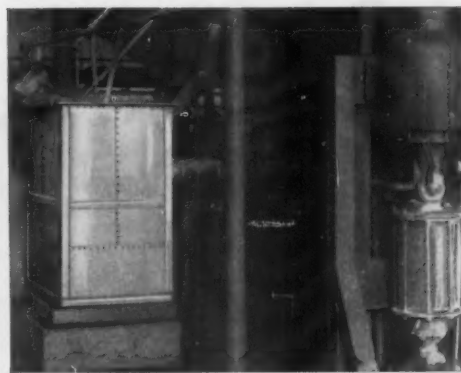
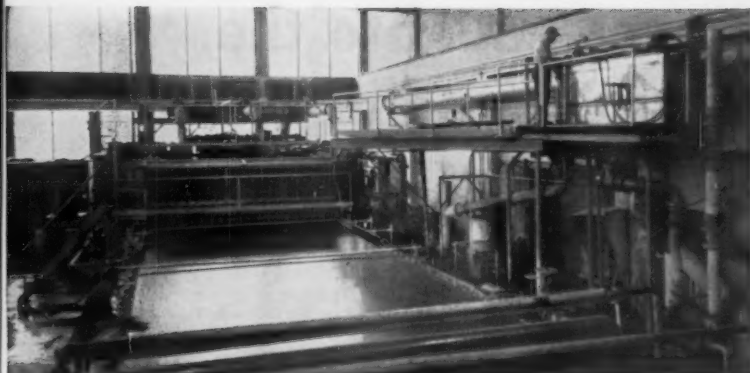


**PAPER MILL FINDS BARGAIN IN CORROSION-RESISTANT CONDUIT.** Acid fumes from Charmin Paper Products Company's sulfite digesters combined with moisture to corrode standard heavy-wall conduit so badly it had to be renewed every six months. Then the conduit was replaced with Republic ELECTRUNITE "Dekorons"-Coated Electrical Metallic Tubing. In service for nearly seven years now, it has outlasted standard conduit ten to one. A tough coating of polyethylene encases lightweight, strong ELECTRUNITE® E.M.T. in an end-to-end armor that is impervious to excessive moisture and corrosive fumes. It can be cut to length and bent to fit as easily as standard E.M.T. conduit. Also available in hot galvanized rigid steel conduit. Joints are protected by polyethylene or vinyl-backed electrical tapes. Contact your local electrical distributor for more details. Or mail us the coupon.



**BRIGHT ANNEALED STAINLESS STEEL TUBING.** Republic Steel and Tubes Division's new, continuous bright annealing furnace now makes it possible for you to obtain tubing with a dense, smooth, lustrous finish. The furnace produces a tube with a hard, high-quality finish in sizes from 1/4" through 4" O.D. Bright annealed tubes are produced from flat rolled Republic ENDURO Stainless Steel, cold formed into a tubular shape, and joined by the inert arc welding process. Every foot of tubing has uniform wall thickness, is perfectly concentric, meets every requirement called for by ASTM and ASME. Mail the coupon for more information on bright annealed tubes.





**CONVERSION TO STAINLESS STEEL PAYS OFF** in cleanliness, uniform quality, minimum maintenance and reduced costs at Allied Paper Corporation of Kalamazoo, Michigan. Recently the company started a conversion program in its three pulp-blending and paper mills. Older equipment, made from less versatile materials, is being replaced with stainless. Allied is already enjoying a 50% reduction in weekly clean-up and maintenance time. The reason? Stainless is so easy to

clean and keep clean. A simple flushing with water or diluted acid solution brings stainless back to sparkling cleanliness. Danger of stock loss due to inclusion of the oxides of corrosion or other contaminating matter is eliminated. Another reason is the fact that stainless steel is solid. There's no applied surface to crack, chip, flake or peel. Its smooth, hard sanitary surface offers little foothold for contaminants. Rarely needs refinishing or restoring.

## Paper Processors' Biggest Bargain

No other commercially available material offers so many advantages. Select stainless for a specific purpose, such as protection of product purity or minimum maintenance, and automatically get all of its "bonus benefits."

Pulp and paper processors discussed above selected equipment fabricated from Republic ENDURO® Stainless Steel for various reasons. All are benefiting from faster production, elimi-

nation of spoilage, lower costs, ease of cleaning and higher product quality. You could be enjoying these same advantages. Your equipment supplier has all the facts. Or send us the coupon for more information.

*These advantages of stainless steel are brought to you by Republic Steel in behalf of the stainless steel equipment manufacturers and the Republic Stainless Steel distributors—your local steel service centers.*

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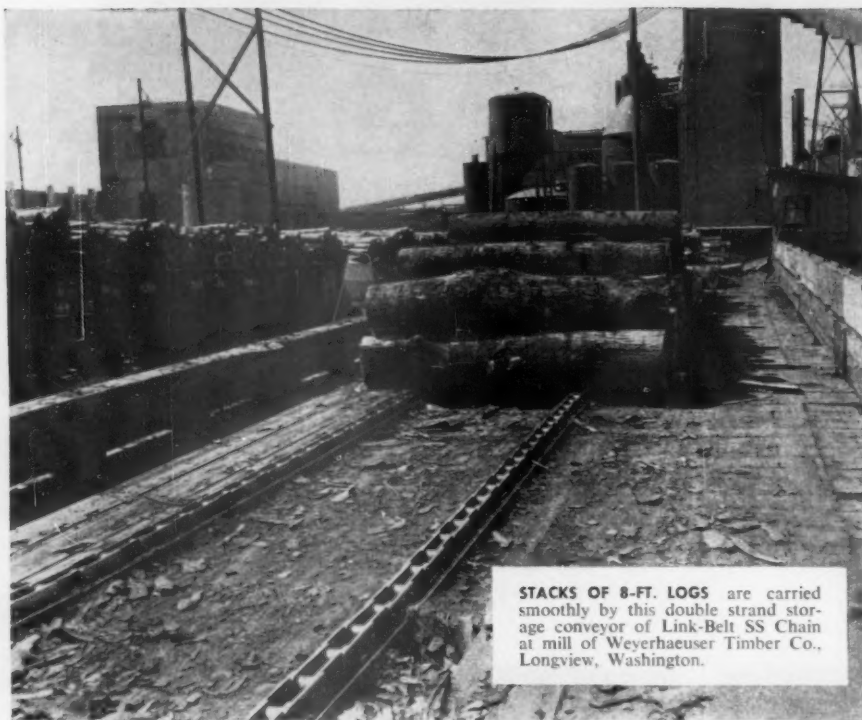
Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# Link-Belt SS chain proves equal to the punishing service of log handling



STACKS OF 8-FT. LOGS are carried smoothly by this double strand storage conveyor of Link-Belt SS Chain at mill of Weyerhaeuser Timber Co., Longview, Washington.

## Easily withstands impact, abrasion and heavy loads

Dependable performance on heavy-duty jobs like that at left has won wide favor for Link-Belt SS bushed chain.

### Exceptional Durability

With its great strength and stamina, this steel fabricated chain easily absorbs repeated impact loads . . . shrugs off abrasive and corrosive conditions that often cause early failure of ordinary chain. This ruggedness assures top operating economy by reducing maintenance, replacements, and conveyor shutdowns.

### Many design refinements

Long-life design of Link-Belt SS bushed chain incorporates sidebars of selected bar steel, accurately formed and machined for tight press fit of pins and bushings. The latter are made from hardened steel and positively locked against rotation in sidebars.

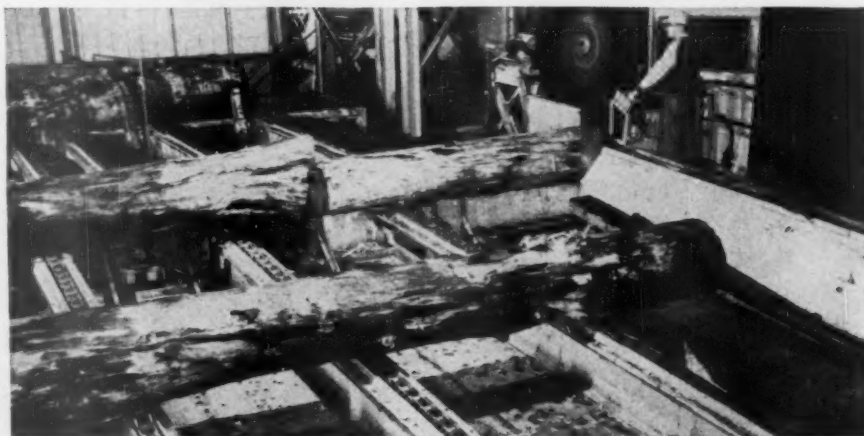
In addition, Link-Belt offers a broad selection of attachments which allow economical adaptation to a variety of conveying and elevating needs.

## Joint surfaces are made extra hard to prolong chain life

Throughout the lumber and pulp and paper industries, Link-Belt SS chain is setting amazing endurance records in the face of highly abrasive conditions. This success stems from a combination of design refinements and accurately controlled manufacturing processes. And one of the most important is extra hard joint surfaces.

These tough, smooth surfaces—up to five times harder than standard malleable—resist wear resulting from day-in, day-out service involving heavy shock loads and constant exposure to cutting action of abrasive particles. They repel gritty materials . . . prevent troublesome packing.

Another factor that adds to the endurance of Link-Belt SS chain is its extra-thick steel sidebars. They present a greater stability and, together with hardened steel pins and bushings, provide the strength needed to prevent distortion under continuous heavy loads. Also, hardened steel bushings minimize wear from sprocket tooth action.



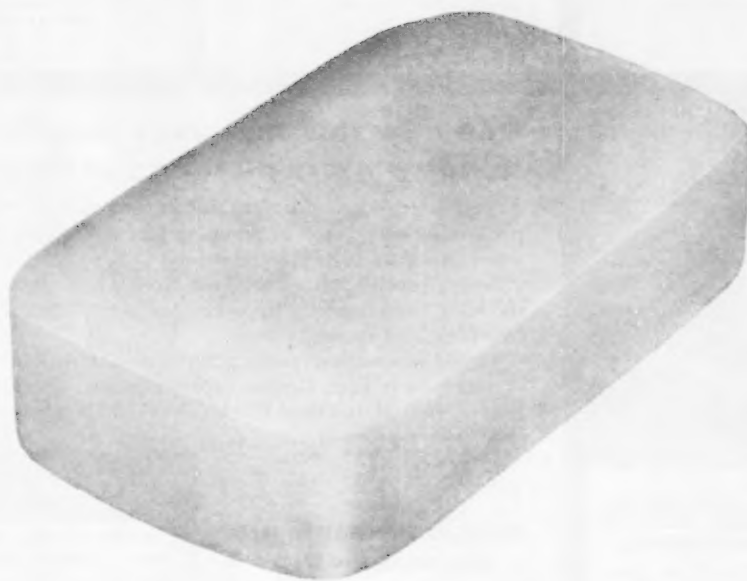
VERSATILE SS CHAIN is used extensively in wood rooms at several Weyerhaeuser mills . . . as inclined and horizontal log haul conveyors and on log decks to and from breakdown machinery.

HEADQUARTERS for chains, sprockets and other Link-Belt products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor. Refer to the Yellow Pages of your local Phone Directory.

# LINK-BELT

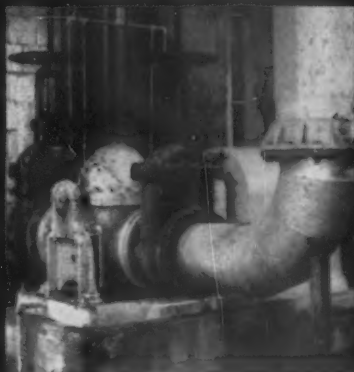
CHAINS AND SPROCKETS

LINK-BELT COMPANY: To Serve Industry There Are Link-Belt Plants, Sales Offices and Factory Branch Stores at San Francisco 24, Los Angeles 22 (Montebello), Seattle 4. Sales Offices and Factory Branch Stores at Portland 10, Spokane 10, Salt Lake City 1. Stock Carrying Distributors in Principal Areas.

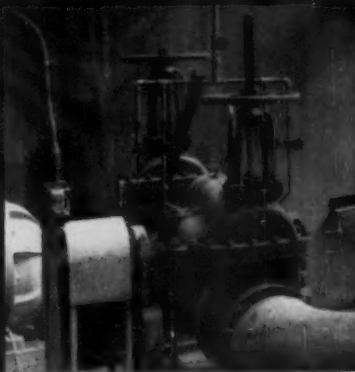


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**BELLINGHAM • WASHINGTON**





**GOULDS FIG. 3405**, double-suction centrifugal handling 4,000 GPM white water against 100 ft. head to screen showers.



**GOULDS FIG. 3405**, double-suction centrifugal pump handling 2,000 GPM strong black liquor from foam tank to storage.



**TWO GOULDS FIG. 3405**, double-suction centrifugals at left are rated for 800 GPM against 240 ft. head for fresh water shower and for squirt and trim knock-off service.



**GOULDS FIG. 3450**, double-suction centrifugals on mill water supply. All are rated for 9,000 GPM against 100 ft. head.

### See how this mill uses Goulds pumps to solve every pumping problem

At this large pulp and paper mill\* in the south, Goulds pumps are performing every kind of pumping job: mill water, liquors, white water, stock up to 4 1/2% and others.

Such a broad application of the Goulds line means you can find the *right* Goulds pump for every purpose when preparing stock, bleaching, and making paper.

To get information on the pump that's "right" for your job, get in touch with your Goulds representative\*, or write to Goulds Pumps, Inc., Main Office Works, Dept. PP-118, Seneca Falls, N.Y.

\*name furnished upon request

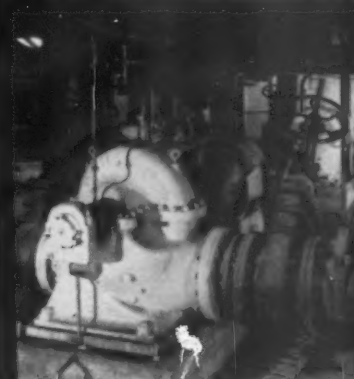
**GOULDS**

**GOULDS PUMPS, INC.**

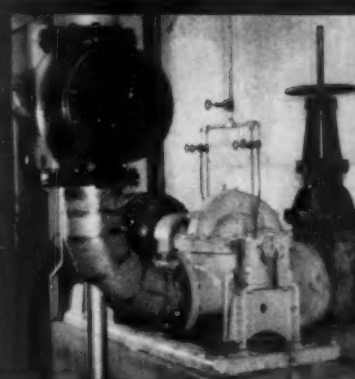
Main Office and Works

Dept. PP-118, Seneca Falls, N.Y.

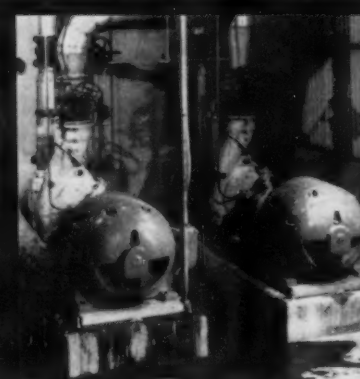
**PUMPS FOR THE PULP  
AND PAPER INDUSTRY**



**GOULDS FIG. 3450**, double-suction centrifugal pump handling 7,000 GPM weak bleach liquor to washer. In background are three Goulds liquor pumps.



**GOULDS FIG. 3405**, double-suction centrifugals pumping white water. Pump illustrated is pumping 4,000 GPM to line type consist regulators.



**TWO GOULDS FIG. 3105**, stock pumps handling 585 gallons per minute of one per cent stock from centri-cleaners.



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All of these 300 proven styles can be shown to you by a Hamilton Felt Service Salesman. If one of these "standard 300" won't solve your specific need, we will be happy to design a Hamilton Felt that will. Write us, without obligation — today.



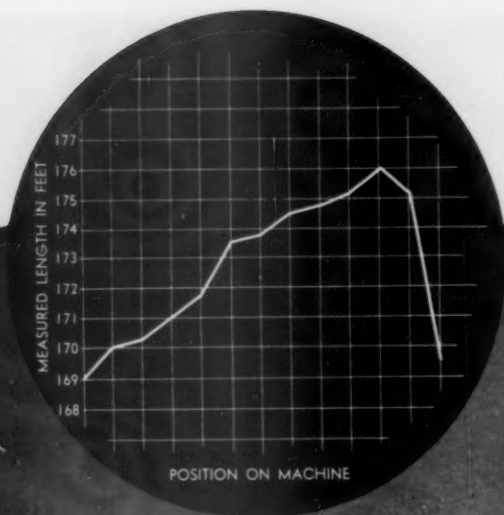
**HAM FELTZ says:**

"It's Wonderful to be 100 years old and as modern as Shuler & Benninghofen"

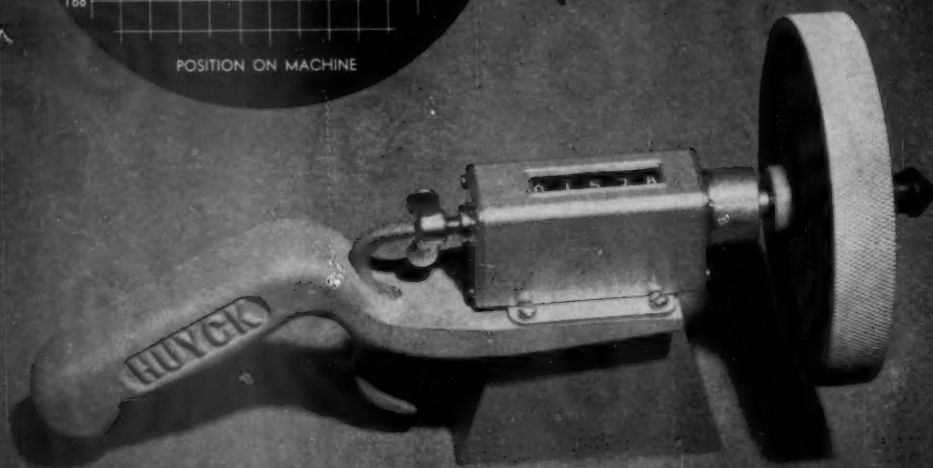
YOU CAN'T BEAT

# Hamilton FELTS

**SHULER & BENNINGHOFEN, HAMILTON, OHIO**



Typical stretch curve taken on bottom board felt as a result of "wheel" reading.



this "wheel" turns profits for you

Pictured above is the new '59 model Kenwood Felt Measuring Wheel used by Huyck Sales and Field Service Engineers to (1) determine whether felts are running at proper operating tension and (2) gather vital data bearing on felt design and service life. Just one of many new precision tools provided *only* by Huyck, the "wheel" shortens the distance to better production of better paper at lower felt cost per ton.



Huyck Felt Co.,  
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# AMERICAN (DISC-TYPE) SAVEALLS

*at Scott Paper Co., Everett, Washington,*

*handle 8,000 gpm of white water . . .*

*show excellent recovery . . . only 0.5 lbs. fiber*

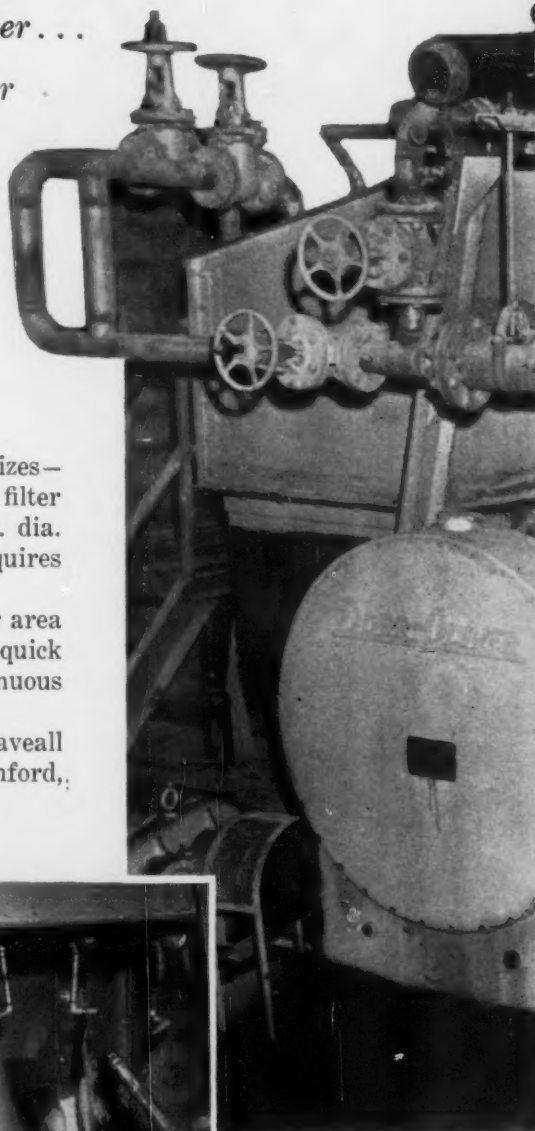
*1,000 gpm remains in effluent*

Four American Savealls, each 9 ft. diameter with 10 discs, are installed in the Scott Paper Company mill at Everett, Washington. With only 8 of the 10 discs in operation in each machine, a total of 8,000 gpm is handled. The experience of Scott Paper Co. shows excellent recovery . . . only 0.5 lbs. fibre per 1000 gallons of clarified water.

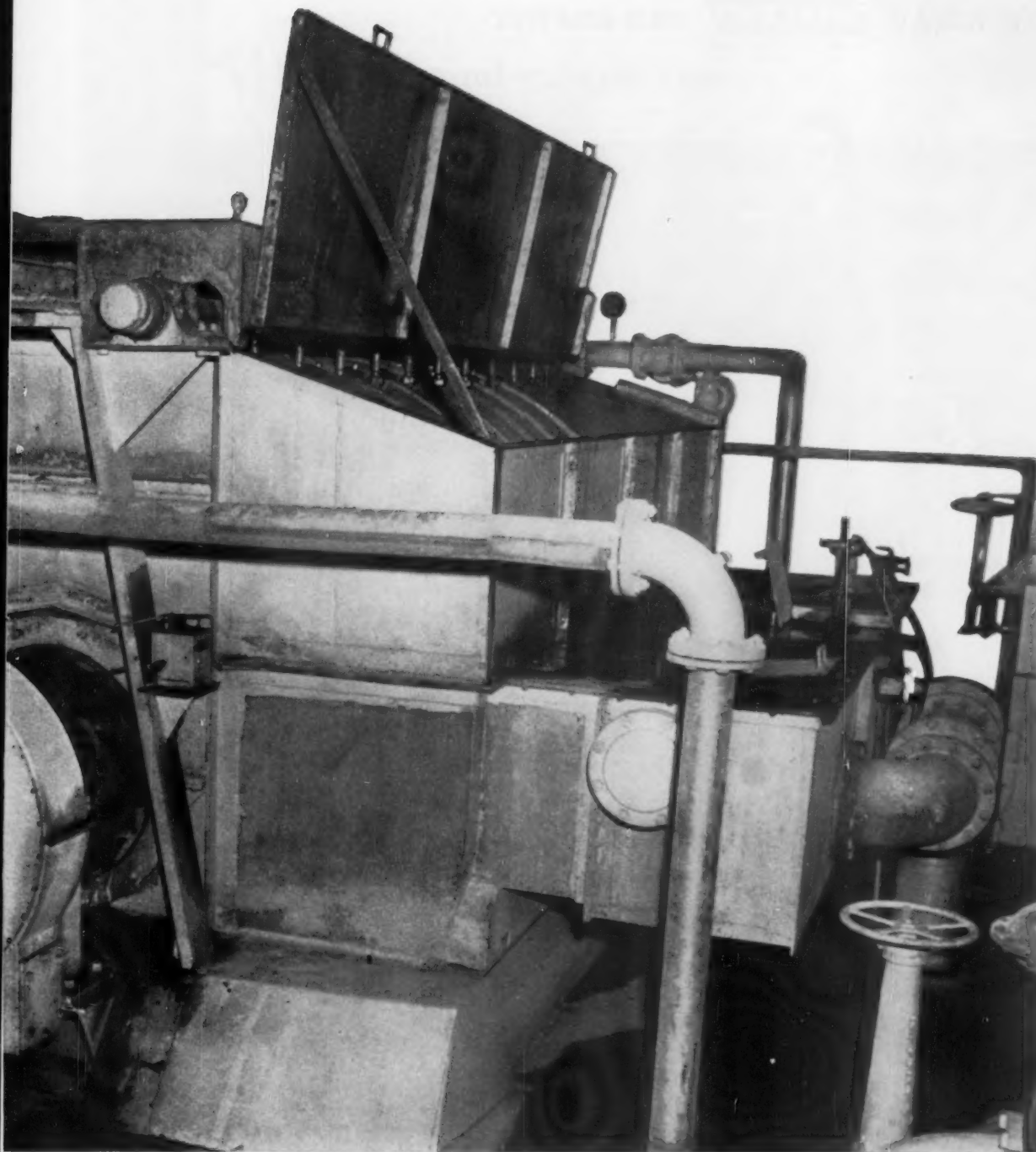
The American Disc-Type Saveall is available in two sizes—9 ft. dia. with a maximum of 12 discs having 1320 sq. ft. filter area requires only 23 ft. x 12 ft. floor space, and 7 ft. dia. with a maximum of 8 discs and 560 sq. ft. filter area requires 8½ ft. x 15½ ft.

Outstanding operating advantages include—large filter area and high capacity with minimum floor space, easy and quick replacement of disc sectors, and fully automatic and continuous operation.

For more information on the American Disc-Type Saveall write for Bulletin 701-R. Dorr-Oliver Incorporated, Stamford, Connecticut, U. S. A.



Close-up shows how the sluicing jets cut under the sheets and peel or slice them off. The fine fibers and costly fillers are then returned to the stock chest with the sheet.



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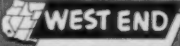














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## Picture of a Money-Saving Moment

...shows the Cameron Shaftless Unwind Pickup about to lift a mill roll to unwind position at the feed end of a Cameron 14 Slitter-Rewinder at P. H. Glatfelter Co. The automatic loading operation is controlled from the operator console. The mill roll capacity is 6" to 92" wide, and 60" diameter.\* Features include: hydraulically oper-

ated pickup arms; automatic centering of mill roll; manual skew adjustment; two water-cooled brakes; edge guiding; mill roll oscillation; and removable chucks adaptable for various sizes of paper cores, metal-ended cores, or iron pipe cores.

\*Also available in smaller models for 42" diameter roll or larger models for 72" diameter roll.



JACK MILLER, Paper Division Superintendent, and STEWART BURNS, Finishing Department Superintendent, checked all possibilities, then chose Cameron. P. H. Glatfelter Co., established at Spring Grove, Pa. in 1864, is a completely self-contained paper-making operation, from vast company-owned forests and water supply reservoirs to the fine book, bond and converter specialty papers for which their name is famous. Roll production equipment at Glatfelter includes two Cameron 14 Slitter-Rewinders and a Cameron 19 Mill Type Winder.

**Cameron Machine Company, Franklin Road, Dover, N. J.**

Canada: Cameron Machine Co. of Canada, Ltd., 15 Hatt St., Dundas, Ontario  
France: Batignolles-Chatillon, 5 Rue De Montessuy, Paris (7e) France

## Why Glatfelter Chose the **CAMERON** Shaftless Unwind Pickup

The new Cameron Shaftless Unwind Pickup at Glatfelter increased operating speed by 50% compared to shaft-type backstands. It reduced set-up time 75%. It eliminated troublesome web "whip", thus assuring reliable quality control, even at top speed.

To find the best unwind equipment available today Glatfelter management investigated all possibilities. They liked Cameron's simplicity of operation. They saw its promise of dependable high productivity. They recognized the inward excellence of Cameron's new concept of shaftless design and construction...and they chose Cameron.

Reports from Glatfelter tell us that the Cameron Shaftless Unwind Pickup has surpassed its promise in speed, quality, dependability and economy of operation.

**Now, don't let time and money losses pile up.** Whether your need is to correct a minor fault in roll production, or to engineer a major installation of slitting and roll winding equipment, it always pays to call in a Cameron team. Do it today!

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### Authoritative Reports from Montreal Fundamental Research Symposium

At a meeting as potentially important and far-reaching as the International Fundamental Research Symposium at Montreal in mid-September on hardwoods and their very promising future as a pulping raw material, PULP & PAPER magazine decided more than the customary coverage was in order.

So—on these pages—you have authoritative critical reviews of the papers given at Montreal.

DR. JOSEPH NORMAN SWARTZ,

technical director of Bowaters Southern Paper Corp., Calhoun, Tenn., and himself a native son of Montreal, has written for PULP & PAPER readers his own critical comments and appraisals of most of the papers that were given. His commentary is a feature of this presentation of the news from the Montreal meeting, in which leading scientists of this industry from many countries participated.

Dr. Swartz studied under the fa-

mous Dr. Harold Hibbert in the cellulose chemistry department at McGill University, earning his b.s. in chem. eng. in 1934 and his ph.d. in 1937. He was technical supt. at Howard Smith Paper Mills before going to Bowaters Southern in 1954.

JOSEPH D. HALE and H. SCHWARTZ, both from Ottawa Forest Products Laboratory, also contributed authoritative comments on papers given in Montreal.

# Hardwood—Pulp of Future

Is this industry fully awake to its many advantages?

Transition of pulp and paper to hardwoods is inevitable

By **DR. JOSEPH N. SWARTZ**  
Technical Director, Bowaters  
Southern Paper Corp.  
(Written especially for  
PULP & PAPER)

—Montreal

• The Fundamental Research Committees of the CPPA and TAPPI should be congratulated on the magnificent job they did in assembling here the leaders in the field of hardwood utilization representing management, research and production.

The program was ideally arranged. A logical sequence was followed in the presentation of the hardwood program, i.e., importance, availability, genetics structure, physics and chemistry followed by the practical phases of pulping and bleaching and paper and board making properties.

There is no doubt that alert and progressive management is aware of the economic necessity of substantial utilization of hardwoods as was so ably discussed by Douglas W. Ambbridge, president of Abitibi Power & Paper Co. Ltd. The extent of the recognition and acceptance of these facts by large segments of the pulp and pa-

per industry is open to considerable conjecture. Research has amply demonstrated that expanded use of our hardwood resources is feasible. Management and operations may well accent the increased use of hardwood pulps in paper products as inevitable, and the evidence presented would indicate that this should not be deleterious to either the product or manufacturing efficiency.

#### Real Facts Revealed

It was somewhat disappointing to note that the bulk of the participation in the symposium was made up of research and development personnel; granted the meeting was listed as a Fundamental Research Symposium. The panel discussions on pulping and bleaching, and paper making properties were of practical interest to every pulp and paper mill superintendent and chemist. It was during these meetings that the real facts of hardwood operations were revealed, questioned and cross examined.

It is hoped that the information derived at these meetings will aid somewhat in the transition of our industry to hardwoods which is bound to occur within the next few decades.



DR. J. N. SWARTZ—disappointed more operating executives didn't attend.

**Distribution and Availability of Hardwoods in North America—Love; Improvement of Hardwood Through Genetics—Joranson**

*A summary of the paper by Dr. Love is in the article on these pages headed "Vast Potentials for Use of Hardwood." A summary of Dr. Joranson's paper—see "Genetics Talk Stirs Debate on Procedure."*

The writer finds it difficult to be concerned regarding the supply, or improvement of quality of our pres-

## REPORT FROM MONTREAL

ent hardwoods; we have barely scratched the surface of utilizing our present hardwood resources. Present hardwood yearly increment growth in North America is over 50 million cords per year which is more than our total consumption of wood of all species (hard and soft).

In the United States some of the desirable species as poplar, birch, gum are being pulped for corrugating. One newsprint mill in the northeast is using hardwoods. A few mills are making full bleached hardwood pulps by the kraft, soda or neutral sulfite processes. Grinding of "soft" hardwoods for newsprint is unusual. A similar condition exists in Canada. The situation is deplorable to the extent that several congressional committees have concerned themselves with hardwood utilization. There are indications that a few of our more progressive pulp and paper producers are becoming alert to the favorable economics accompanying hardwood utilization.

### Studies on the Interfiber Bonds of Wood III. An Investigation of Hot Stock Pressure Refining of NSSC Pulp

By Lennart Jansson, AB Kamyr, Karlstad, Sweden, and Stig Lagergren, Billeruds AB and Scen Rydholm, Saffle, Sweden

As the interfiber bonds of wood are weakened by an increase in temperature, hot stock refining is of interest for mechanical and semichemical pulping to decrease power consumption, and possibly to decrease the extent of ruptures across the fiber-wall. Extreme hot stock refining under pressure is possible in connection with continuous cooking, and an Asplund Defibrator added to the conventional Kamyr cooking system was tested for this purpose with a subsequent secondary low-temperature refining stage on the pulp blown from the digester, in the production of neutral sulfite semichemical pulp for bleached glassine paper. However, it was soon found out that although the total energy consumption was somewhat reduced, high temperature refining caused inferior pulp quality, as judged from beating and paper strength testing of unbleached as well as bleached pulps. By increasing the distance between the defibrator disks, to yield a very coarse pulp, the final pulp quality was only little improved. By lowering the temperature of the refining and digester discharge system, quality was gradually improved to correspond to that of low-temperature refined pulp. The phenomena, which bear close resemblance to those observed in continuous kraft cooking, are interpreted as a chemical attack of the cooking liquor on the exposed secondary wall, when the transition lamella is damaged or loosened by mechanical action. However, as no

## Vast Potentials for Use of Hardwood

The stage was set for the International Fundamental Research Symposium on hardwoods and their relation to pulp and paper manufacture in Montreal in two introductory addresses.

Douglas W. Ambridge, president of Abitibi Power & Paper Co. Ltd., said:

1. If the industry is to grow, hardwoods must be used.
2. Conifers are too far scattered and are costing too much to get out (he seemed to make an exception of Southern U.S.A. when he said, facetiously, of course, that he would volunteer to lead a crusade to get more pay for Southern timber producers).
3. More research must be done in hardwoods.

### How Much Hardwood—

Prof. D. V. Love of the University of Toronto forestry faculty, said:

1. Across most of the U.S.A. and Canada, hardwood volume is increas-

ing annually about 1% on a compound interest basis (but this rate cannot continue indefinitely).

2. A total of 51,000,000 cords is the net available growth left over after present utilization for all purposes (2.5 billion cu. ft. in U.S.A. and 1.5 billion cu. ft. in Canada).

3 This is slightly more than the total use in North America of both hardwoods and softwoods annually—51,000,000 cords.

4. Principal available species are beech, maple and oak in Northeast U.S., oak, poplar and beech in Central U.S., oak, gums and hickory in South U.S., beech and maple in Canada's Maritime provinces, poplar and birch in Quebec and Ontario and poplar in the Prairie provinces.

5. If hardwoods are made accessible by roads, their use could be doubled. This is the most important step to be taken. "One of the last things we will get around to is fertilization."

effects on the analytical composition of the pulps could be observed, the chemical action is believed to influence the quality rather than the quantity of the strength-bearing components.

This paper describes the ultimate in hot stock refining when chips at 130°C are subjected to mechanical treatment between refiner plates at settings of approx. .001", .008", and .020".

Unfortunately no power readings are available for calculation of btu input and final stock temperature, which must have been very high.

It is not surprising that under these conditions of high temperature and close plate setting that a disruptive explosive effect must have occurred, which would certainly damage fibers, and cells. When temperatures were reduced going to the refiner, by introduction of water, at the cone of the Kamyr digester, satisfactory pulp was produced.

This work is well worthwhile following up in our own kraft industry, particularly high yield. Why not design our blow tanks for 10-25 psi?

### The Penetration of Hardwoods

Dr. J. E. Stone and H. V. Green, Pulp & Paper Research Institute of Canada, Montreal

In this review, particular emphasis is laid on the methods which may be used for studying the pore structure of wood as it applies to the penetration of liquids and the diffusion of ions.

It is pointed out that the penetra-

tion of liquids into hardwoods is entirely dependent of the presence of vessels, with the fibres contributing little or nothing to liquid flow. The result of this is that liquid flow (penetration) across the grain is negligible. A further result of flow being confined to vessels is that rates of penetration into hardwoods show wide variations, being very rapid when the vessels are open and extremely slow when they are plugged by tyloses.

A separate and distinct mechanism for the movement of chemical into wood is ionic diffusion. Diffusion of ions can occur across the cell wall itself and is not dependent on the presence of vessels, nor is it dependent on the absence of tyloses. It depends, so far as wood structure is concerned, on the total cross-sectional area of the diffusion paths, which in turn depends on direction relative to the grain, on wood density and on swelling of the cell wall by alkaline reagents. Diffusion, however, is a much less variable mechanism than penetration, and when the wood has a high moisture content and the distances involved are small it is a method for transporting chemical into wood which probably has a wider application than penetration.

The authors presented excellent examples of poor penetration in chips impregnated with acid and alkaline liquors, pointing out the importance of prior evacuation and pressure.

Tyloses in certain hardwoods such as beech and white oak prevent the rapid penetration of cooking liquor through the vessels, and this phenomenon was illustrated by measurements of water sinkage rates and air porosity through a variety of hardwood species.

The authors postulate that cooking

liquors gain access to the middle lamella by two methods: (1) mechanical penetration and (2) diffusion, and present very logical mechanisms.

Penetration is a mechanical effect whereby liquor penetrates the vessels rapidly along the wood grain, especially in dry wood. But fibers situated 15-20 diameters distance from a vessel are also impregnated quickly which occurs due to liquor diffusion across the cell walls.

Certainly there must be other forces involved, as was pointed out; the effect of pH, swelling due to alkaline liquors, capillarity and brooming of chips, wettability of the fiber walls and surface tensions.

#### Hardwood Resin

*Dr. Donald B. Mutton, Organic Chemical and By-Product Division, Industrial Cellulose Research Ltd., Hawkesbury, Ont.*

The use of certain hardwood species for the manufacture of dissolving pulps is complicated by the fact that the wood may contain rather large amounts of extractives which are not easily removed during cooking and bleaching. A high content of extractives, or resin, in the pulp may cause difficulties in processing the pulp and may adversely affect the properties of the finished yard or film.

The major component of hardwood resin is fat, present either as free fatty acids or as neutral fatty esters. The resin is largely located in the ray parenchyma cells, although under certain conditions it may be found in other anatomical elements of the wood. Possible relationships between the resin and physiological processes in the tree are discussed.

One procedure which is helpful in producing low-resin pulps is seasoning of the wood before cooking. Quantitative studies have been carried out on the chemical changes which take place in the resin when white birch is seasoned under various conditions. The results show that the major change is a conversion of fatty esters to free fatty acids, although under certain conditions further degradation of the fatty material may occur.

The proportion of the resin removed from the pulp by sulfite cooking appears to be closely related to the composition of the resin in the wood.

Since the resin is largely present in the very short ray parenchyma cells, the removal of the fine fiber fraction is often an effective means of resin reduction in hardwood pulps.

Other methods of deresination which are effective are the use of surfactants in the hot alkaline extraction stage, and the use of various oxidizing treatments in the first stage of pulp bleaching. Quantitative studies have been carried out on certain model compounds to determine the chemical effect of various chlorinating and oxidizing agents on hardwood resin.

The resins or "pitch" in hardwoods is characterized by the almost complete absence of resin acids as com-

## Genetics Talk Stirs Debate on Procedure

Improvement of hardwoods through genetics was discussed by Dr. Philip N. Joranson, Institute of Paper Chemistry, Appleton, Wis., who chairs TAPPI's forest biology committee. Safety is not in numbers, he said, when considering survival of species, but rather in the genetic variety within a species. This is true because environment is always changing, and considerable genetic variety is also a very basic requirement in genetic improvement of forest trees.

He cited progress at the Appleton Institute in Aspen improvement and in understanding how wood variability may affect paper strength. Genetic improvement, he said, can increase pulp yield. Genes also influence pulping time and power and chemical requirements. In Germany, it has been determined that high cellulose poplars can be identified when four years old.

Strength of fibers, the capacity of fibers for bonding and length of fibers will be decisive factor categories for strength improvement of the sheet. But forest geneticists must go beyond this, he said, and deal with more ultimate influences affecting these three categories.

The pulpwood properties considered to affect two of these avenues of influence on sheet strength are:

A. *Fiber strength*: 1, cell wall dimensions, including fiber diameter, 2, degree of polymerization of cellulose and hemicellulose, 3, fibrillic angle in middle layer of secondary wall.

B. *Bonding characteristics*: 1, hemicellulose content, type and distribution, 2, fiber and cell wall dimensions.

pared to softwoods. The resin in hardwoods is associated with the ray parenchyma cells—and represents a method whereby the tree stores food.

The objections to resin in purified hardwood pulp were described particularly in dissolving grade pulps and saturating papers.

When the fatty esters are converted to free fatty acids by storage of the wood, the bleached pulps produced by the sulfite process are relatively free of resin.

The mechanism whereby the composition of the "pitch" is altered should be of considerable interest, and may very well apply to the resins in pine and tamarack.

Bleaching of hardwoods containing pitch is preferably conducted with either chlorine dioxide or hypochlorite in the first stage; if chlorine is used it adds to the double bonds of the unsaturated fatty esters resulting in a sticky unsaponifiable mess.

Application of genetics, said Dr. Joranson, will lead to improved qualities as well as growth rates in wood.

An interesting discussion arose after his talk. One scientist emphasized that in typical logging operations, the best genetic types are removed, leaving scrawny and poorer types to carry on the species. Does this mean plantation growing must come? In Europe, it was said, foresters emphasize improvement without disturbing harvesting.

At North Carolina State College, the delegate said, seeds are selected from primary stock to meet specific requirements of Southern mills in fiber length and specific gravity. Inside of 30 years, they will know how right they are. Many companies are collecting seed from improved stands. Penobscot Experimental Forest in Maine was cited for a demonstration of stand management to improve genetic make-up.

In Australia, a delegate from there said, best eucalyptus trees are left to be seed trees. "We can only judge by outward appearance," he added. An Australian conference could not come to full agreement on desirable objectives for wood quality improvement, yet this question must be decided now, it was said.

Dr. D. A. Fraser had prepared a report on radial growth of species in hardwood stands of Ottawa's Petawawa Forest Experiment Station. Control of radial growth is of a hormonal nature apparently. A regulating mechanism other than food seems to control cell differentiation.

The use of surface active agents and dispersants were discussed at some length.

#### The Carbohydrates of Hardwoods

*Dr. J. K. Hamilton, Rayonier Inc., Shelton, Wash.*

This paper presents a comparison of the carbohydrate material associated with hardwoods and softwoods. The cellulose of these two types of wood appears to be similar, while the amount and type of hemicellulose (and lignin) is quite different. Hardwoods contain about 20-25% hemicelluloses, the main constituent being D-xylose; whereas softwoods contain about 15-20% hemicelluloses, the main constituent being D-mannose. The roots in either group contain large amounts of starch and, in the case of hardwoods, relatively large amounts of polymers rich in galactose and arabinose. Pectin occurs in both softwoods and hardwoods.

The main hemicellulose of hardwoods is 4-O-methylglucurono-xylan with a high ratio of xylose to 4-O-



## REPORT FROM MONTREAL

methyl-D-glucuronic acid, while the major xylose-containing polymer of softwoods is a 4-O-methylglucurono-araboxylan in which this ratio is low. However, each group contains small amounts of the polymer that predominates in the other. The behavior of these xylose-containing hemicelluloses in the various pulping processes will be mentioned briefly.

In addition to cellulose and the predominant 4-O-methylglucurono-xylan, hardwoods also contain small amounts of mannose galactose, and arabinose. Most of the mannose appears to be associated with a highly inaccessible glucomannan. Most of the galactose and some arabinose and xylose are part of an easily accessible complex carbohydrate system located in the middle lamella.

In softwoods, the main hemicellulosic materials are the difficultly extractible glucomannans. Soluble galactoglucomannans, glucomannans, and arabogalactans occur to a lesser but significant extent.

By a suitable pretreatment and extraction with high-strength sodium hydroxide, chlorite holocelluloses prepared from either type of wood give rise to a high-viscosity residue (28-32% yield) in which the total hemicellulosic material has been reduced to less than 0.25% for softwoods and less than 0.1% for hardwoods (based on wood). These results indicate that most of the hemicellulose is not chemically combined with the cellulose of either softwoods or hardwoods.

### Some Recent Studies of the Polysaccharides of White Birch and Other Hardwoods

*Dr. T. E. Timell, Pulp & Paper Research Institute of Canada*

A quantitative isolation of virtually unchanged cellulose in the form of a nitrate is possible by direct nitration of untreated wood from deciduous species with a non-degrading acid mixture. The molecular weight of the cellulose nitrates has been determined from viscosity measurements based on light-scattering data. American beech, white birch, yellow birch, white elm and red maple all contain 40-41% cellulose with a weight-average degree of polymerization varying between 6,500 and 10,000. The corresponding figures for trembling aspen are 53% and 8,000. The molecular-weight distributions exhibited only one maximum throughout.

Almost one-third of the wood of white birch is a methyl glucurono-xylan composed of linear chains of 1,4-linked  $\beta$ -D-xylopyranose residues. Every tenth, on the average, of the xylose residues carries a single side chain of 4-O-methyl-D-glucuronic acid unit, attached by an  $\alpha$ -glycosidic linkage through the 2-position of the xylose. The number-average degree of polymerization of the native polysaccharide is 197 and the chain-length distribution contains one maximum. Yellow birch and sugar maple both contain less xylan than white birch but the structure and properties of their hemicelluloses are almost identical with that of the latter. White elm, on the other hand, which has a lower

xylan content than most hardwoods, contains a methyl glucurono-xylan characterized by its large number of acid side chains, being more similar in this respect to softwood xylans.

Preliminary data indicate that white birch wood also contains minor quantities of water-soluble polysaccharides yielding mostly galactose, glucose, mannose and arabinose on hydrolysis and resolved into three components on paper electrophoresis.

These two papers were presented by leaders in the field, and the carbohydrate chemist will no doubt want to study the original papers for an excellent review as well as some new data on this subject.

Of interest to the pulp and paper maker are the presence of the branched chain galacto mannans in the hardwood hemicelluloses, as contrasted to the straight chain glucomannans in softwoods. Is this the reason why certain hardwood pulps display strength properties equivalent to the much longer fibred soft woods? We must not lose sight of the fact that large quantities of galacto mannan are added to our paper making fibres as beater additives (locust bean gum, etc.).

### Groundwood and Chemi-Groundwood from European Poplar Wood.

*Prof. Walter Brecht, Darmstadt Technical University, Germany*

In the central regions of Europe, the pulp and paper industry is faced with a shortage of wood. Therefore, much interest has been directed towards poplar which grows much faster than spruce. When poplar is compared to spruce, which is most widely used in the manufacture of normal groundwood, it is found that a lower power consumption is required in the grinding of poplar. However, on a basis of equal freeness, the strength properties of poplar groundwood are lower than those of spruce, but the sheets are characterized by high bulk, porosity and softness. The brightness is slightly lower than that of spruce. Poplar groundwood is therefore qualified as an addition product to certain soft and bulky printing papers, but less suitable for long-fibred newsprint and magazine paper. Italy, nevertheless, was able to fill its total national newspaper requirement with poplar wood.

Libby and O'Neil have shown that hardwood groundwood can significantly be improved by chemical grinding. Investigations on several methods of chemical grinding, carried out at the Institute of Paper Manufacture in Darmstadt, have enabled a technical comparison to be made between poplar and spruce. Poplar groundwoods, after having undergone a comparatively mild pretreatment, have shown higher strength properties than those made from normal poplar wood. A more intensive treatment results in poplar groundwoods which are stronger than spruce groundwoods. Since specific energy is lowered in

the grinding of chemically treated poplar wood, a higher groundwood production can be realized. The loss in brightness which occurs in the chemical pretreatment of spruce does not occur in the case of poplar. Chempoplar is also especially suited for printing papers because of its low dusting tendency.

Prof. Brecht discussed the importance of hardwood utilization in the "have-not" countries in Europe, where coniferous wood species are scarce; Italy is in this category. However, hybrid poplars have been developed to a high degree (25-40 cords/acre/yr?).

This paper describes experiments conducted with a miniature grinder on poplar wood billets subjected to ten different treatments involving evacuation, steaming, boiling and chemical treatments under various conditions. It is concluded that treatment similar to those used for chemi-groundwood produces groundwood superior in all respects to spruce.

Experiments were also conducted in the application of various chemicals as sodium sulfite, bisulfite and carbonate at the grinder showers; results obtained were encouraging.

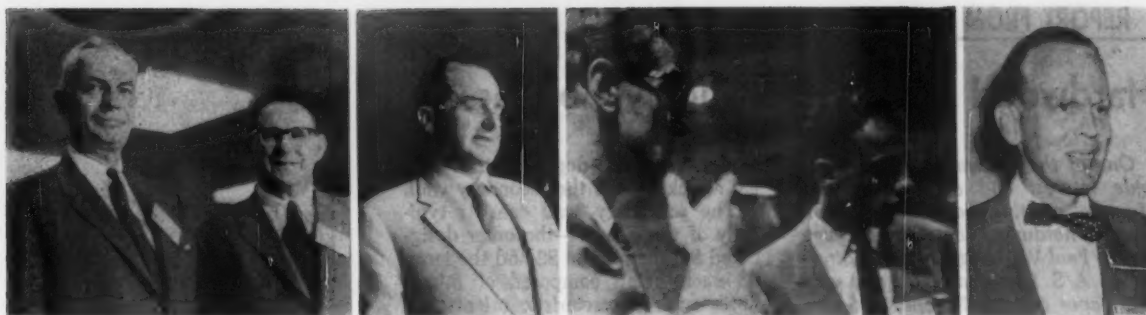
Admittedly low density poplar is the ideal raw material for whole-log impregnation: we wonder why these experiments were not extended to similar trials on chips?

### Hardwood Extractives and Their Relation to Other Wood Components

*Dr. Irwin A. Pearl, The Institute of Paper Chemistry, Appleton, Wis.*

Although a great amount of research has been performed on the lignin and extractives of coniferous woods, very little attention has been given to analogous noncarbohydrate components of deciduous woods. In many instances our knowledge of deciduous wood components is based almost entirely on experiments performed on coniferous woods. For example, over the years most research on lignin was concerned with coniferous woods, and most experimenters today are agreed on the fundamental nature of the basic unit of coniferous lignin. On the other hand, except for the facts that coniferous wood lignin is comprised only of guaiacyl moieties, and deciduous wood lignin contains both guaiacyl and syringyl moieties, very little has been learned concerning the fundamental nature of deciduous wood lignin. Instead, lignin chemists have created a picture of deciduous wood lignin in the image of coniferous wood lignin, but containing syringyl groups in addition to the guaiacyl groups.

Recent investigations have indicated that assumptions based upon coniferous lignin studies may not be valid when applied to deciduous wood lignins in general and aspenwood lignin in particular. It was found that aspenwood (*Populus tremuloides*) yielded substantial



Dickerman ..... Brecht ..... Muller-Rid ..... Stone ..... Morkved ..... Steenberg

#### At International Gathering in Montreal:

GIL DICKERMAN, director of corporate planning and development, Consolidated Water Power & Paper Co., chats with Dr.-ING. WALTER BRECHT, head of paper mfg. section, Darmstadt Technical Institute, who came from Germany to give important paper. Dr.-ING. WILHELM MULLER-RID, chief engineer of

J. M. Voith Co., Heidenheim, West Germany, one of world's leading paper machinery builders. Dr. JOHN E. STONE, Pulp & Paper Research Institute of Canada, with LORENTZ MORKVED, from the Technical University, Trondheim, Norway. Dr. BORJE STEENBERG, director of Swedish Forest Products Laboratory.

amounts of *p*-hydroxybenzoic acid when pulped by the sulfite process or when boiled with dilute alkali. In addition, it was demonstrated that the extractives of aspenwood are responsible for a large share of the *p*-hydroxybenzoic acid obtained. Continued experiments on the extractives of aspenwood have indicated that *p*-hydroxybenzoic acid may be a sort of "common denominator" of aspenwood, being found in combination with lignin fractions, carbohydrates, phenolic materials, sterols, and long chain aliphatic compounds.

The finding of *p*-hydroxybenzoic acid in the alkaline hydrolysates of the extractives of *Populus tremuloides* and other *Populus* species led to a comprehensive study of the extractives of representative hardwoods. To date these studies have comprised alkaline hydrolysis studies on the extractives of forty-six representative hardwood species, alkaline hydrolysis studies on the hardwoods themselves, and acid hydrolysis studies on the extractives of these woods. The qualitative and quantitative data for the phenolic materials obtained in the alkaline hydrolysates and for the phenolic and carbohydrate materials obtained in the acid hydrolysates indicate certain relationships. The present paper discusses the occurrence of cer-

tain phenolic compounds and sugars in the extractives of various hardwood species. The qualitative and quantitative relationships of these materials and their application to biosynthesis of hardwood species and to taxonomic classification of these woods are considered.

The project represents a worthy contribution to the fundamental chemistry of the hardwoods; a considerable amount of investigation remains to be done. It is entirely possible that a major "break-through" has been achieved in the lignin problem.

#### Hardwood Lignin

Prof. J. M. Pepper, University of Saskatchewan, Saskatoon, Sask.

A review of the present knowledge regarding the chemical structure of the protolignin of hardwoods is given. A discussion is presented regarding the methods and problems associated with the isolation of this component of all woody plants. In the case of hardwoods, any representative lignin fraction, comprised as it does of both guaiacyl- and syringyl-containing nuclei, presents added problems of

heterogeneity and differing relative rates of chemical alteration during isolation.

The research that has been directed towards the elucidation of lignin structure has been conducted using wood meal directly or using an already isolated lignin which undoubtedly has undergone some chemical change. Considering these two approaches, the more important and older fields of study, such as: color reactions, solvolyses, hydrogenation and hydrogenolyses, oxidation and alkali fusion; as well as the more recent approaches of biogenetic and biosynthetic studies using  $C^{14}$ -labelled precursors, and ultraviolet and infrared absorption spectra, are discussed in the light of their individual contributions to the solution of the lignin problem.

An attempt is made to correlate the more important of these findings and to present a composite picture of the present status of the chemical structure of hardwood lignin. The problem remains far from solved, and some of the major questions yet to be answered are raised, along with suggestions as to paths that future research may profitably take to assist in their solution.

Dr. Pepper should be congratulated for the critical and honest analysis he presented on the lignin problem.

We are not certain if the various products studied represent true lignin; there are a multiplicity of materials, methods of isolation, techniques employed. It is entirely possible that lignin is a relatively simple material, complicated by the methods required to isolate it; "the lignin chemist may be involved by a monster of his own creation."

It is known that hardwoods contain "lignin" mixtures partially made up of the guaiacyl and syringyl radicals while in softwoods the former predominates. The present state of knowledge of the subject was well summarized and an optimistic note expressed regarding new techniques of the biogenetic and biosynthetic approach.

#### Paper and Board Making Properties of Hardwoods—A Panel

Dr. Borje Steenberg (Swedish Forest Products Laboratory) discussed the advantages in the use of birch hardwood (predominating in Sweden) in the various paper grades and concluded that the intelligent application of hardwood pulp in fine or kraft paper furnishes results in improved sheet characteristics.

Dr. D. O. Adams (West Va. Pulp and Paper Co.) reported on some very interesting and fundamental work on the "crushability index" of the most common hardwoods. It is interesting to note that this index grades the hardwoods very well as to papermaking qualities.

Dr. D. T. Jackson (Hammermill Paper Co.) reported on the use of Neu-

tracel at Hammermill. He suggested that further fundamental work is required on the following problems related to bleached NSSC pulps from northern hardwoods: (1) maximum fiber yield as it relates to hydration characteristics, (2) wet web strength at the couch, (3) performance in the press section, (4) the irreversible drying characteristics, and (5) chemical recovery.

This was a most illuminating paper. Dr. Rodger M. Dorland (Abitibi P & P Ltd.) described hardboard technology in general and then discussed the pros and cons of hardwood utilization in each stage of the process. This was a most interesting paper delivered by an expert in the field.

## Hardwood Structure Is Highly Complex

One of the papers which attracted wide interest and comment at the Montreal meeting was on the morphology of hardwood fibers. It was given by Dr. Paul W. Lange, research director of A/S Borregaard, biggest pulp and paper mills in Europe, at Sarpsborg, Norway. Dr. Lange, a native of Sweden, went to Borregaard from the Swedish Forest Products Laboratory.

This review of Dr. Lange's paper was written especially for PULP & PAPER by Mr. Hale, who himself gave a paper on the same program on the anatomy of hardwoods.

By JOSEPH D. HALE

Ottawa (Ont.) Forest Products Laboratory

**The Morphology of Hardwood Fibers,** by Dr. Paul W. Lange—The author explains the layered structure of the walls of hardwood fibers as revealed during recent years by the new approaches which physics has made available. The microfibril, although the smallest morphological unit so far distinguished in the fiber wall, commands the greatest present interest for its significant effects on technological properties of pulp and paper.

Electron microscopy has given good evidence that cellulose and probably also certain fractions of hemicelluloses are deposited in the fiber wall in the form of more or less ordered microfibrils appearing as flat ribbons of about 100Å width and indefinite length. The width-thickness ratio seems to be about 3-4. There is also evidence that hemicellulose and lignin are dispersed between the fibrils through the whole fiber wall.

Aside from the intercellular middle lamella which is predominantly lignin, different layers of more or less individual character are distinguishable in the fiber wall. The outermost layer of a typical wood fiber is the so-called primary layer which envelopes the main or secondary wall. The primary wall is only about 300Å thick as seen dry by the electron microscope (the thickness of 3 microfibrils), but in the native state is estimated as about one-tenth of a micron. It appears to be a loose network of microfibrils in the outermost layer, which becomes more transversely organized in the layers nearest the secondary wall. With cellulose content less than 50%, the primary wall is heavily lignified, resistant to swelling media and more resistant

to the enzymatic degradation of fungal attack than is the secondary wall.

The secondary wall consists typically of three layers—the outer designated S1, the middle S2 and the inner S3—each being composed of microfibrils with characteristic orientation. Microfibrils are preponderantly parallel in each of the secondary wall layers and more closely packed than those of the primary wall. The secondary wall of hardwoods is said to be less lignified than that of softwoods, but slightly higher in hemicelluloses (e.g., in spruce mostly mannan and in birch mostly xylan). Like the primary wall which it contacts, S1 is strongly lignified and is more resistant to fungal attack than S2, possibly because of some difference in physicochemical structure of the microfibrils and/or of the incrusting materials.

By far the greatest part of the cellulose microfibrils is deposited in S2 in close-packed highly parallel screw structure at an angle nearly parallel to the fiber axis. The S2 layer is by far the thickest and most prominent layer of the fiber wall. The innermost (S3) layer, sometimes called the tertiary wall, is highly differentiated from S2 and is very resistant to fungal attack being comparable to the primary wall in this respect.

Allowing for extreme technical difficulties in relating reliable chemical analyses with certainty to specific layers of the fiber wall, present conception as to how the fiber wall components are distributed is about as follows: In normal wood fibers, lignin is mainly outside the S1 layer of the secondary wall in the middle lamella and the primary wall. In the major part of the fiber wall inside the S1 layer, carbohydrates are dominant components. Within the narrow range of the S1 layer there is probably great change in fibril properties.

Exception to the normal fiber wall structure is noted in tension wood where lignin is confined almost entirely to the compound middle lamella (i.e., to the middle lamella and the primary wall) with practically none in the secondary wall. Instead of the normal 3 layers, the secondary wall of tension wood may have 2, 3 or even 4 layers with a gelatinous layer innermost which may be S2, S3 or S4.

In beating, removal of the primary wall and the consequent swelling have been noted as the main effects in improving paper strength. The primary



DR. LANGE, Swedish born research director at Norway's Borregaard mills.

wall exerting more or less isotropic "plywood" strength will not swell—contrary to the other layers in which the component fibrils are preponderantly parallel.

Finally, the abnormal structure of tension wood, said to have poor papermaking properties in acid-made pulp, has been reported to produce mechanical pulp with properties superior to those of normal wood.

### Physical and Anatomical Characteristics of Hardwoods

This paper, ably presented by Mr. Hale, also was a highlight of the meeting and is reviewed here by an Ottawa colleague for PULP & PAPER readers:

By H. SCHWARTZ

Supt., Ottawa Forest Products Laboratory

**The Physical and Anatomical Characteristics of Hardwoods** by J. D. Hale—The author described the types of hardwoods as characterized by their general structure, the arrangement of cells of communication between cells, and special characteristics of the cell wall.

One of the main differences between hardwoods and softwoods appears to lie in the presence in the former of vessels or pores (in transverse sections). These vessels are comparatively short, tubular cells with open endings which fit together like minute lengths of pipe, and form long continuous channels specially adapted for conducting sap. In softwood the vessels are typically open. However, as the tree grows these cavities become filled with ingrowths of small cells, known as tyloses. These tyloses play an important part in prevention of penetration of liquids through wood.

There are other distinguishing features of hardwoods such as shorter length of its fibers, more conspicuous ray cells, greater density, and smaller cell dimensions for the extreme types. These features are of course, only of



importance to the papermaker in so far as they affect papermaking properties. The author actually attempted to show this particularly with reference to the influence of density.

An important aspect of the presentation by Mr. Hale was concerned with the method of selection and appraisal of trees for technological properties. The proper sampling of trees by both diameter and age classes is of extreme importance. Also the determination of superior qualities of wood through comparison with the species norm, and the propagation of trees with superior qualities are matters that should greatly concern woodlands people.

## Pulping and Bleaching of Hardwoods—A Panel

Ken G. Chesley (Crossett Co.) discussed the results of an intensive investigation on the kraft and NSSC pulping and bleaching of Southern red and white oaks. Such a paper has been long overdue in the interests of hardwood utilization in the South. The results obtained in the paper machine operations and conclusions reached as to the economics as compared with the gums would be most interesting.

Dr. G. A. Day (Brown Co.) pointed out the anomalies existing in modern dissolving pulp evaluation for viscose and other chemical uses. The advantages of hardwood for use in dissolv-

ing grades was discussed.

Dr. Warren B. Beazley (Industrial Cellulose Research Ltd.) reported most interesting data on sulfite cooking and bleaching of spruce, birch and maple. We concluded that for many paper and dissolving grades, sulfite and sulfate bleached hardwoods are equal to or superior to their softwood counterparts.

Dr. James H. Ross (Pulp and Paper Research Institute of Canada) discussed the wood chemistry of hard and soft woods as related to the mechanisms and kinetics of various pulping procedures.

# 25 Cords / Acre / Year!

is just one of many sensational disclosures at Montreal. Fast poplar growth and good pulping may revive Europe's industry

By **ALBERT W. WILSON**  
Editor, PULP & PAPER

—Montreal  
● Twenty-five cords of poplar harvested per acre per year in West Germany!

It would be hard to single out many more sensational statements than that one at the International Fundamental Research Symposium, which TAPPI and the Technical section of the Canadian Pulp & Paper Assn. sponsored in Montreal in mid-September.

But there were many other exciting disclosures at this meeting, bringing together many of the most distinguished scientists of this industry as Dr. Joe Swartz of Bowaters so ably points out in his authoritative review of this meeting, which precedes this article in this issue. There were at least a score of delegates among the 222 registered who came from Germany, Sweden, Norway, Finland, Ireland, Australia, Japan, Italy and South Africa, including several top men in research internationally. They all had plenty to say about hardwoods the wood of the future.

The reference to poplar came in connection with an important paper very expertly presented by Prof. Dr. W. H. Brecht, head of paper manufacturing section of Darmstadt Technical University, Darmstadt, West Germany, the famous school after which the Institute of Paper Chem-

istry in Appleton, Wis., was modeled. He compared methods of making semi-groundwood and groundwood from poplar. Two of the former are the Weishuhn mild pre-treatment vs. the Libby-O'Neill (Syracuse University) strong pre-treatment semi-groundwood processes.

## Poplar May Revive Pulp Industry in Europe

With such fantastic growth achievements as 25 cords per acre per year—which seemed almost incredulous to American and Canadian ears—Dr. Brecht said that poplar, among all the European hardwoods, is best

suited for chemical and semi-chemical processing.

Among the fastest growing trees in Europe is the poplar. Fantastic results have been accomplished in Italy, too. In the very clean and well-managed German forests, three to four cords of spruce a year per acre have also been achieved. This also appears to North Americans to be truly remarkable for softwood production.

Dr. Brecht indicated that the new processing methods—and he thanked Americans for their contributions—may revolutionize the pulp industry in Europe. It should lead to greatly increased fiber supply for nations



Lewis ..... Gallay ..... Rapson ..... Jahn

## These Four Were Among Session Chairmen and Moderators at Montreal:

DR. HARRY LEWIS, vice pres., Institute of Paper Chemistry, Appleton, Wis.; DR. WILFRED GALLAY, research director, The E. B. Eddy Co., who pinch-hit for Dr. Roy Whitney, Appleton Institute dean, who was in hospital with a slipped disc (he is out now and much better); W. HOWARD RAPSON, professor of chem. eng., University of Toronto, and DR. EDWIN C. JAHN, assoc. dean and dir. of research, college of forestry, Syracuse University.

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where the usable supply has been critically short for many years.

Tests at Darmstadt show that pulping of poplar has especially good results when chemicals are added at the grinder pit. Up to 55% of the weight of the wood has been added at the grinders in these experiments. Best all around results were achieved when sodium carbonate was added. But sodium monosulfite was productive of better brightness.

There was no general difference in impregnation of spruce and poplar, but without pre-treatment poplar was not as bright. There was an increase in power consumption.

### Change in Tone of Meeting

One delegate rose to say that for two days of the conference they had been hearing of difficulties of hardwood pulping, but on the last day, featured by two blue ribbon scientist panels, the theme seemed to be that hardwoods were not a serious problem at all and, instead, was a new Cinderella species of the pulpwood pile. The enthusiasm of the free-wheeling panels—both with famed international authorities serving—was pretty infectious and it would seem that hardwood pulp might be the best pulp of all, if everything they said turns out to be as wonderful as it sounded.

Pulping and bleaching were given A grades by the first panel. Dr. James H. Ross, consultant to the Research Institute of Canada and also to J. T. Donald Co., started off rather modestly saying cooking of aspen was good. Dr. Warren B. Beazley of Industrial Cellulose Research Ltd. (Canadian International Paper), cited comparisons of birch with maple and spruce for dissolving pulp at Hawkes-

bury, Canada, and most were highly favorable. Birch is abundant, fast growing, of high density, kraft yields are superior to most softwoods, it is easily bleached and sufficiently strong for most papers, and while weaker than sulfite, is good for many purposes.

Next came Ken G. Chesley, research director for The Crossett Co., who gave highlights of a paper he delivered a week later at the Alkaline Pulping conference in Hot Springs, Ark. He talked of oak, which Crossett is using successfully in foodboard with 88 to 90 brightness. It is cooked there by both NSSC and kraft process and is used bleached and unbleached. A "little chlorine dioxide" is used on the kraft bleach.

Dr. G. A. "Happy" Day, tech. director for Brown Co., agreed pretty much with Dr. Beazley as to birch experience. He said hardwoods are steadily invading the fields of softwoods, and has advantages "in their own right." It is accepted for dissolving viscose pulp. He indicated he felt they will stand up well in "the hurly-burly" of competition.

### Mixing Hardwoods and Softwoods

There was much discussion of mixing hardwoods and softwoods. At the Hawkesbury mill, 13 different woods, hard and soft, have been cooked simultaneously. Bleached dissolving pulp is handled as a blend from start to finish. It was felt highly probable that more hard and soft woods could be blended for paper. "Fortuitous blends may give better pulps," said one recognized authority. Blended jackpine and mixed hardwoods made the best paper pulp in a whole series of experiments by one company.

For market paper pulp, this poses a problem. Paper mill customers want a choice. They want to do the blend-

ing, as a rule. One problem—poplar tends to overcook ahead of softwoods. But the blending, successfully handled, could be most important as it would use up woods in ratio as they come into the mill.

### Report from Hungary

There was a lot of interest in a report from the floor of how a Hungarian mill found the best blends were 75% spruce and 25% hardwood. Bleaching demand was very high for this poplar. Some cells were not dissolved. When this Hungarian mill dropped to 70% spruce for a medium hardness, poplar was soft-cooked and tended to stick on drying cylinders. They tried to use poplar for high grades.

One interesting idea out of this discussion—make a Dagwood sandwich of pulpwoods in the digester by separating layers with 10 mesh stainless steel. This keeps the chips separated but gives good circulation "with some very interesting results."

The Southern U. S. mills want long fibers for their bread-and-butter products but at least one speaker said don't sell the hardwoods short, as they will be good for other grades. "One's deficiency is another's advantage." Crossett and Champion in Texas are examples of mills making fine bleached papers from oak. One prediction was that the future recovery plants for hardwood pulping may be fundamentally changed to handle different burning and fumes problems.

### Another Panel is Optimistic

The windup on the third day was a session on paper and board making properties of hardwoods. Dr. Borje Steenberg, head of the Swedish Forest Products Laboratory, who had a goodly number of his very appreciative students in the audience (now in responsible mill or research positions in many companies in North America), was quite matter-of-fact to start it off. He said that 10% of hardwoods has been used for multiwall bags, and that the hardwoods give a good printing and well formed sheet in various paper grades. He pointed out that blending was out for export pulp, as there is an extra duty if it is not kraft (and of course the customers don't want blends, anyway).

Dr. Dan Adams of West Virginia Pulp and Paper Co., from his Covington, Va., company laboratories, brought word of refractionating pulps and blending in ray cells into an unbeaten hardwood pulp for a higher bursting strength and other qualities. Dr. Donald T. Jackson, technical director of Hammermill Paper Co., said his company likes hardwoods for fine



Salvesson ..... Chesley ..... Thiesmeyer ..... Jackson

### Others at Montreal:

J. R. SALVESSON, research director, Marathon div. of American Can, Rothschild, Wis., who found a younger graduate from his Trondheim, Norway, college; KEN CHESLEY, research director, The Crossett Co., Crossett, Ark., took part in a panel; LINCOLN THIESMEYER, president of Pulp and Paper Research Institute of Canada, welcomed delegates who stayed over another day to formal opening of the Institute's new home west of Montreal; DR. DONALD T. JACKSON, Hammermill Paper Co., Erie, Pa., served on a panel.



Brauns ..... Lange ..... Cerio ..... Cohen ..... Beazley ..... Day

### World Travelers in Montreal Meeting: From Near and Far

OTTO BRAUNS, head of the Swedish industry's Pappersbrukens Centrallaboratorium (actually heads paper, groundwood and wallboard research), Stockholm, trades notes with DR. PAUL W. LANGE, research director, Borregaard mills, Norway. DR. GEORGE CERIO, pulping manager, Cartiera Italiana mills, Serravalle

Sesia, Vercelli, Italy. DR. WILBY E. COHEN, senior principal officer, Division of Forest Products, Commonwealth Industrial Research Org., South Melbourne, Australia. DR. WARREN B. BEAZLEY, Industrial Cellulose Research subsidiary of Canadian IP, and DR. G. A. "HAPPY" DAY, Brown Co. tech. director.

paper. For Hammermill, it is essentially a filler pulp, used as a blending agent of about 25% with long fibered pulps. Dr. Rodger M. Dorland, research director of Abitibi Power & Paper Ltd., was final speaker on this panel and he provided some valuable information on analogous problems in the production of a hardboard from the hardwoods, a new product of his company.

### May Prove Important to Many Nations

The Montreal meeting, basically,

may prove one of the most important meetings in years, not only from a North American viewpoint, but from those of other nations who were represented. It was definitely a highly representative gathering of top brains from many nations. It is true that some of the papers were in the nature of reviews—a well read technical leader would have heard much he already knew. Yet there were new interpretations and considerably new information, too.

As one case in point, the paper by Dr. I. A. Pearl, of the Institute of Pa-

per Chemistry, who went to that staff from Seattle and the University of Washington. He emphasized that extractives of hardwoods deserve the attention of this industry as much as extractives of softwoods and exotic woods. In his studies at Appleton, he has uncovered a whole new realm of problems arising from the pulping of aspen and hardwoods. His talk at Montreal was only on one phase of his work. If the demand is there, he said, a way will be found to get out the hardwood extractives as has been done with softwoods.

## Engineering and Site Preparation Proceed for Celgar Kraft Pulp Mill

Construction of the proposed \$30,000,000 bleached sulfate mill of Celgar, Ltd. near Castlegar in eastern British Columbia will reach a peak during the first half of 1960, according to Ian Barclay, secretary of the company and assistant to Pres. T. N. Beaupre.

Engineering is now being completed for the woodroom foundation pilings. More than \$1,000,000 has been spent or committed on site preparation and pulp mill construction, and Celgar has an investment of more than \$5,500,000 in the Arrow Lakes region tributary to the mill site.

H. A. Simons, Ltd., has completed initial surveys for the mill. Over a million cubic yards have been excavated from the site and 35,000 cu. yds. of riprap was placed along the foreshore. Poole Construction Co. has completed the first main building—the pulp warehouse, 200 ft. long by 160 ft. wide. Robinson & Roberts, groundwater geologists, are engaged in mill water tests and have developed a se-

ries of test wells.

Under its agreement with the British Columbia government, Celgar, subsidiary of Celanese Corp of America, is committed to build a pulp mill of minimum 300 ton capacity, to be in operation by March 1, 1961.

"At the end of 1954," said Mr. Barclay, "the North American kraft pulp capacity was just over 13,000,000 tons per year, of which 1,440,000 tons was Canadian. At the end of 1959 the capacity in North America will be 17,850,000 tons per year, of which 2,340,000 tons will be Canadian. In these five years, the productive capacity of the kraft pulp industry on this continent will have increased 36%, and the Canadian segment 60%.

"It was obvious that there would be an over-supply of pulp on the market for the next few years. However, indications were that the market would again be in balance in the early 1960's. The history of the industry is such that as usage grows and over-supply is as-

simulated, new capacity is again required."

The Celgar mill will be the first off-tidewater pulp operation in British Columbia, and the first large-scale integrated forest industry in the interior of the province.

### Buckeye Develops Stronger Pulp for Cotton Content Paper

The development of a new and improved linters pulp that will help solve problems caused by the shortage of rags in making cotton content paper is announced by Buckeye Cellulose Corp. The product, being marketed under the trade name Lintabond, is said to be significantly stronger than those made from linters prepared by conventional processes.

Vice Pres. C. B. Metz revealed that production of the new pulp involves chemical treatment of linters in such a way that the structure of the natural cellulose molecule is modified. This causes the treated fibers to bond together much more tightly than untreated fibers.



# Highest Cellulose Grades Now Made

at Alaska Pine's virtually "new" Port Alice mill as result of a \$14,000,000 rebuild and improvement job

● Announcing completion of a \$14,000,000 expansion and modernization program at the Port Alice, B.C., chemical cellulose mill, William E. Breitenbach, executive vice president of Alaska Pine and Cellulose Ltd., Rayonier subsidiary, said:

"The long term prospect for the future of chemical cellulose is good as all economic studies point to a continuing rise in the world use for these products. Port Alice is ready to participate in these increased requirements."

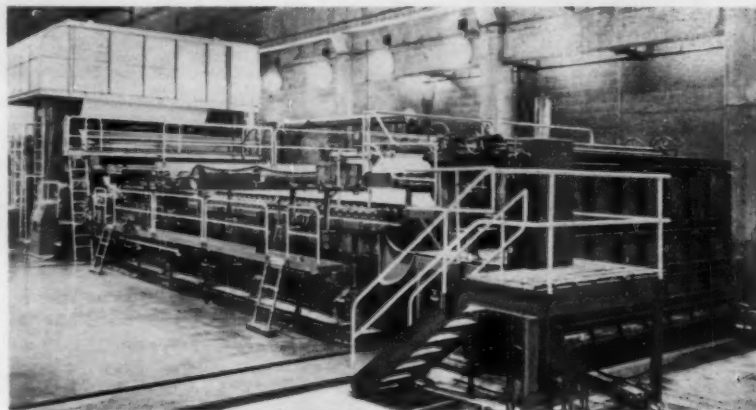
The present program coupled with the \$8,000,000 spent at the plant from 1951 to 1954 makes Port Alice virtually a new mill. The highest grades of chemical cellulose can now be manufactured.

Among products manufactured from chemical cellulose and bleached woodpulp produced at Port Alice are yarn to make viscose and acetate materials for clothing and furnishings, cellophane, tire cord, photographic film and papers, acetate plastics, fine papers and sponges.

The original Port Alice mill, one of the first in the province, came into operation in 1918. In 1951 the Abitibi and Koerner interests purchased B.C. Pulp and Paper Co. Ltd., of which Port Alice was a part. Alaska Pine and Cellulose Ltd. was then formed. At the end of 1954, Rayonier Inc., acquired control. Port Alice is located at the north end of Vancouver Island on Quatsino Sound. There are about 1,000 persons living in the community and about 450 men are employed in the mill.



WM. E. BREITENBACH, Exec V.P., Alaska Pine: "Long term picture is good..."



## New Machine Replaces Two

A new 175 in. Black Clawson Fourdrinier pulp drying machine at Port Alice replaces one 160 in. and one 102 in. machine, originally cylinder machines. One of these came from the first sulfite pulp mill on the Pacific Coast, at Swanson Bay, B.C. Cylinder wet ends were replaced with Fourdriniers three years ago. The new machine has a 90 ft. long wire, stainless steel stock inlet and headbox and Black Clawson variable speed, variable stroke Fourdrinier shake. All exposed parts of the cantilever Hydroflite Fourdrinier are stainless steel or stainless steel protected. The 36 in. Downingtown suction couch roll is followed by a 36 in. suction first press, four 48 in. pre-dryers and two plain presses. Machine drive is a Harland sectional drive. It operates at a range of 150 to 360 fpm, producing 350 tpd.

## What Went Into New Mill

During the recent modernization, changes were made which will step up capacity of Port Alice from 75,000 to ultimately 125,000 tons per year.

The program includes installation of a new pulp drying machine and a finishing room with cutter, lay-boy and high pressure baling presses. Two digesters have been added as well as a large new boiler and 6,000 kw turbogenerator.

Additions to buildings included a new mill supply store, a pulp storage warehouse and a new office building.

Changes have been made in the bleach plant to improve quality and new equipment has been added to the screen room to handle the increased production. A new acid plant has been built.

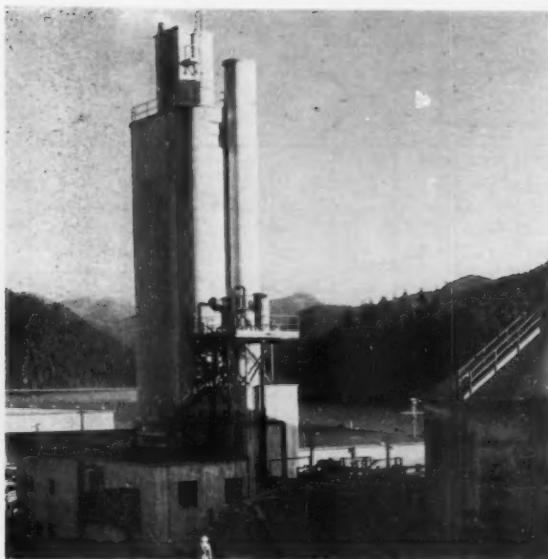
A car-barge slip has been constructed to facilitate the bringing in of necessary chemicals. Large oil storage facilities have also been added. Micro-mesh filters have been installed on the mill water supply.

## New Boiler Adds Steam

Major power plant revisions ensured sufficient energy for planned increase in production. The mill already had two modern 600 psi, 725° F. boilers—one a straight oil-fired unit of 210,000 lbs/hr. capacity; the other producing 100,000 lbs/hr. when fired with hogged fuel, more when oil-fired.

A third 600 psi, 725° F. boiler was added, a two-drum Babcock & Wilcox and Goldie-McCulloch unit furnished and erected by C. C. Moore & Co. Engineers Inc. It is designed to burn hogged fuel principally in suspension as it enters the furnace through an air swept spout at a continuous rating of 100,000 lb/hr. When oil-fired it produces 165,000 lbs/hr. continuously.

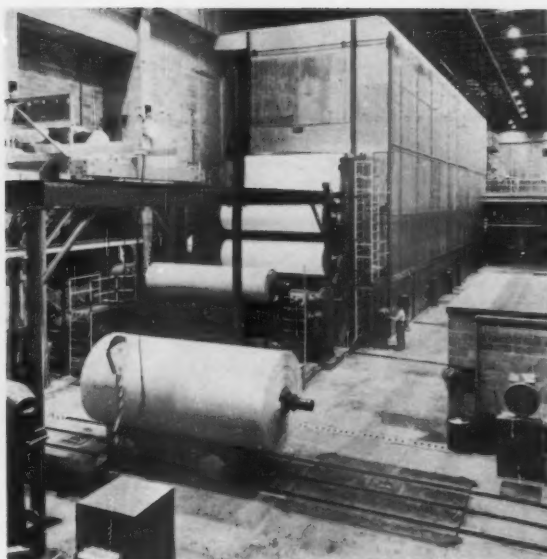
First step towards increasing the electric generating capacity was the removal of a 2,000 kw obsolete turbogenerator. In its place, a 6,000 kw General Electric double extraction condensing turbine and a direct coupled 7500 kva, 2400 volt generator were installed.



### New Acid System Replaces Old

Modern Jensen two-tower system at Port Alice was designed and constructed by Lundberg-Ahlen Ltd. Main structure has rock towers, passenger hoist, limenrock skip hoist, fan, pump and instrument rooms. Modernized acid plant has brick-lined steel sulfur melting tank, spray burner supplementing two rotaries and Chemipulp spray cooler supplementing lead coolers.

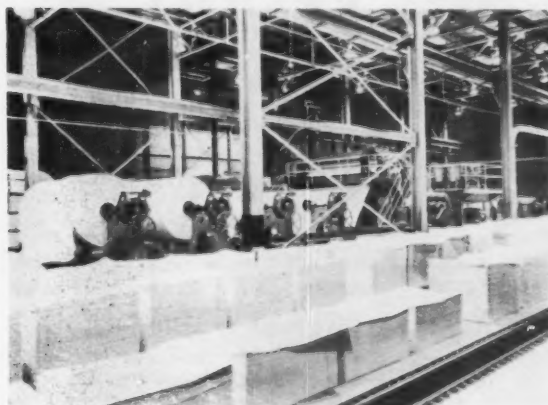
Five digesters now have Esco circulating and indirect heating. A sixth has been added, 18 by 56-ft. with Esco heater. Shell of a seventh is now complete. Both shells are of welded construction by Dominion Bridge Co.



### Arrangement of Dryers is Different

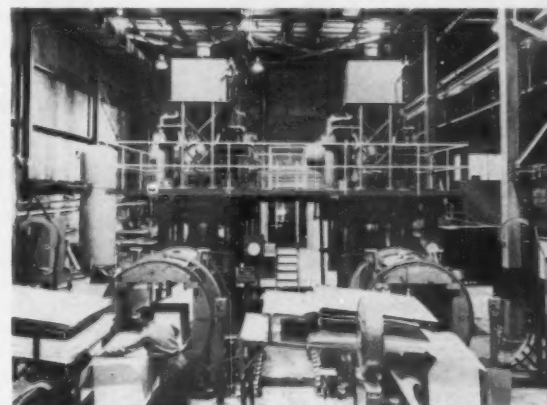
On the drying end of the Port Alice machine are 94 main dryers, 48-in. by 172-in. Four are on the mezzanine; the others, vertically stacked, are in four sections on the ground floor. A draw press with chilled rolls is between the four cooling cylinders following the main dryers and two-reel constant tension winder.

Pre-dryers have an open hood; main dryers, a fully enclosed hood and Ross vapor absorption system. A concrete block pulp testing lab is in the tending aisle. Drive aisle has an 8-ton manual bridge crane. Steam and condensate removal is provided by Ross.



### New Setup for Finishing

Where formerly the cutting and packaging of finished pulp were located at the dry end, the rolls from the winder are transferred to the roll storage building and then to the finishing room which adjoins the roll storage area. This is designed for processing pulp delivered in the form of rolls 165 in. wide weighing from 10 to 14 tons. Two principal items in the pulp finishing department are a 174-in. high speed cutter and an automatic layboy furnished by Lamb-Grays Harbor Co., Inc. This company also furnished a swing conveyor, distributing car, and a transfer car to handle other necessary operations.



### Final Steps in Pulp Finishing

Pulp goes to these roll-over machines where wrappers are applied. The feeding mechanism to the baling presses, air float conveyors and other transfer and handling equipment are supplied by Lamb-Grays Harbor. Two baling lines also include 1000-ton Washington Iron Works presses. Tying is carried out by two Cranston automatic bale tying machines. Storage space for pulp bales awaiting shipment has been increased by the construction of a 140x168 ft. steel frame warehouse, with a flat cedar roof deck and asbestos cement board siding.

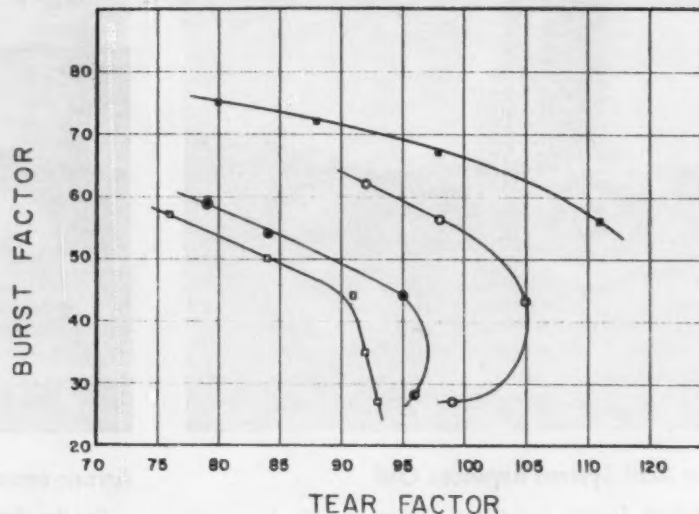
## ALKALINE PULPING CONFERENCE REPORT



Tony Pesch ..... Bruce Zobel

### Saw Eye to Eye on Importance . . .

of what Dr. Zobel had to say about genetics and wood quality. Mr. Pesch, a native of West Bend, Wis., graduate of U. of Wisconsin with a.b. in chem. eng., started in industry in 1923 at Marinette, Wis., mill. He believes moderators ought to contribute to discussions. (He did.)



### This Chart Had Alkaline Pulpers Raising Hands . . .

for questions when Ken Chesley, Crossett's research director, compared NSSC bleached pulp (top line), kraft unbleached, next (with white round dots), kraft bleached, next down (black round dots), and NSSC unbleached, the lower left line (marked by white squares). His data was shown on 26 figures and four tables, which will appear in TAPPI in due course, but there was no question but that this table caused the biggest stir among his listeners.

# Geneticist: "Separate Wood"

Hot Springs really got "hot" when Dr. Zobel got going. A top Southern pulp man backs him up, says "We are in Stone Age!"

● A wood geneticist who admits he gets excited if certain trees give more cellulose than others, or can pass on better strains, presented some new and startling information to leaders of the North American alkaline pulping industry in their annual fall conference at Hot Springs, Ark.

The TAPPI program said many of the ideas to be presented by Dr. Bruce Zobel, of North Carolina State College of Forestry faculty and formerly of the Texas State Forest Service, would be "controversial." But he didn't brook any doubts in emphatically laying down these rules:

1. Variations of wood properties within a tree are greater than the variations between species.
2. There are more variations between individual trees of the same

stand and species than you will ever get between species.

### Advice to Timberland Buyers

"Don't buy a forest on the basis of one or two trees," he said. "The cellulose yield based on dry weight is very different tree to tree. We don't know if the reason is environmental or something else. But it is utterly ridiculous to take one or two samples and form a judgment on an entire stand."

He advised the pulp mill men to separate the kinds of wood they receive that give vastly different yields—"put them in different bins."

"The mills tell me, 'we are too big and have our money tied up in too much wood—we can't mess around doing this,'" said Dr. Zobel. But one

mill admitted "a 1% increase in yield means \$750,000 to us."

### Tony Pesch Backs Him Up

Tony Pesch, moderator of the session and top technical man for International Paper Co.'s Southern Kraft Division in his capacity as technical assistant to Vice President Carlie L. Crain, mgr. of mfg., responded with enthusiasm to the peppery crusader-like talk by the young geneticist. The silver haired veteran of 35 years in Kraft pulping came to his support with matching fire.

"Why, we'll spend \$1,000 for a flow meter to measure the steam going through a pipe, but we won't buy a weightometer or whatever is need to measure the specific gravity of \$10,000 worth of wood," explained Mr.



Pesch. "We haven't the slightest idea of what kind of wood we get. We are in the Stone Age as far as this subject is concerned. If we don't get good results, all we do is blame the pulp superintendent!"

Perhaps no technical man in the industry had a better right to make that crack than Mr. Pesch, as he also has been pulp superintendent in I. P. mills and was manager at the big Georgetown mill before taking over technical direction of all the division.

Mr. Pesch said: "Variations of wood properties, especially spring vs. summer wood, has more to do with differences in pulping than anything else. I am appalled by the lack of information we have on this. Biggest reason for the difference between Northern and Southern kraft is that Southern has a high percentage of summer wood and Northern kraft is 90% spring wood (except Douglas fir)."

#### "Juvenile" Wood Isn't Young

Dr. Zobel was reporting on a genetics study of loblolly pine made in six states—Virginia, both Carolinas, Georgia, Alabama and Tennessee. He found that "juvenile" wood—the inside core or first ten years' growth (which no one would call "juvenile" except a geneticist!)—has shorter fibers, less specific gravity and less cellulose than the so-called surrounding "mature" section (It started in the tree's mature years but is really the least mature section. If you are confused, so were others at Hot Springs).

Specific gravity of "juvenile" wood remains the same as you go up the tree, but that of "mature" (outside) wood declines as you go up. There is 7% less cellulose in "juvenile" wood than in "mature." But cellulose yield may gain as you go up in the "juvenile" inner part.

Compression wood—caused by crooked growth and knots—is very poor in all ways. There is always compression wood below knots and a tree of 10% knots will have 10% compression wood. Tree tops have lots of compression wood, but Dr. Zobel said the Southern Pulpwood Conservation Assn. misunderstood a previous report

he made—he did not mean to advise mills to throw away tree tops, he said, but "just to know what you are getting."

#### Samples Vary in South

Specific gravity samples taken in the six states ranged from .51 in northwest Georgia and Tennessee to .55 in east North Carolina and .56 in east South Carolina. In west S. C. it dropped to .52. In Georgia, Alabama and part of Tennessee it was .53. These were averages. Two trees, seemingly alike and even with roots intertwined, can have .62 and .45 specific gravity, he said.

How can you tell "juvenile" wood? Dr. Zobel said it appears more lifeless than "mature," reflects light differently, but it doesn't always have wide rings and usually it contains very little summer wood. It is the first ten rings out from the pith.

The findings as regards loblolly may be reversed as far as spruce is concerned, he said, according to recent information from Sweden. But Douglas fir may be much the same as loblolly. He said he had reports that white pine in Maine is similar. The outer or "mature" wood is best, as indicated by increasing use of sawmill slabwood. This wood has 25% more strength, 25% more yield, longer fibers and higher specific gravity than "juvenile" wood.

#### NSSC Vs. Kraft A Report From Crossett

Reporting for one of two Southern mills now making quality foodboard from Southern oak, Ken C. Chesley, research director, the Crossett Co., compared results in cooking this hardwood by NSSC and kraft methods, and bleached and unbleached grades. Pulp is run through the same pulp mill and bleach plant intermittently. (For description of plant with pictures see PULP & PAPER, Oct. 1956, pp. 66-76, 116-119.)

His data showed that NSSC oak, both bleached and unbleached, has a lot of qualities that make it better than kraft. But kraft is still less ex-

pensive (otherwise more mills would be going to semichemical) and, of course, Mr. Chesley said, "strength isn't everything." A Wisconsin semichem producer said Crossett's oak data "checks out with aspen, too."

At Crossett, the oak pulp is used on a cylinder machine, mixed with pine, making foodboard at 180 to 300 fpm.

The bleached kraft has a yield of 44% and bleached NSSC oak has 48% to 50%.

"The higher strength properties of NSSC pulp can be explained by the fact that it has a higher zero span tensile and a higher relative bonded area," said Mr. Chesley. He drew there four conclusions:

1. As indicated by the zero span tensile test, the inherent tensile strength of unbleached fibers is the same but, on bleaching, the kraft pulp loses tensile strength while NSSC pulp does not.

2. Bleached NSSC pulp requires appreciably less refining than any of the other pulps to develop its maximum strength characteristics.

3. At any specific freeness or sheet density, the burst, tensile and tear values of the bleached NSSC pulp are higher than for the other three pulps (unbleached NSSC and bleached and unbleached kraft).

4. Unbleached kraft pulp is stronger than unbleached NSSC pulp.

#### Palatka, Fla., Mill Likes 18% Active Alkali Charge

A high active alkali charge is conducive to improving pulp strength in various Southern mills and at Hudson Pulp & Paper Corp., in Palatka, Fla., an 18% active alkali charge with a mild cook is giving good yield and good quality for pine unbleached pulp. Higher than that decreases yield while improving quality, and a lower charge lowers quality.

This work was carried out under guidance of Ray Hatch, 75-year-old research director who retires for the second time in his career next July (in 1950 he stepped down as research director for Weyerhaeuser's pulp division). The paper was given by E. D.

% ACTIVE ALKALI (average 3 cooks)	FREEMESS					DENSITY					BURST FACTOR					TEAR FACTOR					TENSILE, #/in.				
Beating Times	0	15	30	45	60	0	15	30	45	60	0	15	30	45	60	0	15	30	45	60	0	15	30	45	60
16%	722	668	522	305	141	.34	.49	.56	.60	.64	16.3	44.1	68.1	78.3	78.0	271	228	178	157	144	11.6	23.9	30.7	32.6	34.3
18%	736	697	561	339	163	.32	.49	.55	.60	.64	15.0	49.8	70.2	79.1	82.4	275	230	189	153	145	10.6	23.4	29.9	34.7	36.7
20%	716	645	476	259	117	.38	.54	.59	.65	.69	19.6	58.9	74.2	78.7	80.0	323	216	176	151	139	12.6	27.3	32.2	34.7	35.3
22%	718	641	457	239	99	.36	.54	.58	.63	.67	16.2	56.5	72.5	77.2	80.3	311	229	174	159	138	13.4	27.1	31.2	34.8	35.2

**STRENGTH DATA—TAPPI Standard Beater Tests (Unbleached Pine Pulps).** Highlights of report by E. D. Cann, Hudson Pulp & Paper Corp.

## PULP & PAPER Camera Rounds Up Some of Hot Springs Delegates



Limerick ..... Natwick ..... Chastant ..... Rich ..... Woodside ..... Vancleave

JACK McK. LIMERICK, research director, Bathurst Power & Paper, Bathurst, N.B., Canada, chairmanned Hot Springs meeting, is also chairman of TAPPI alkaline pulping committee; JOHN NATWICK is vice pres. of Noralyn Paper Mills, planning mill near Baton Rouge. WALDO J. CHASTANT, asst. pulp mill supt, new IP mill at Pine Bluff, Ark., with JOHN RICH, president, Impco Machinery, Nashua, N.H. Finally, VERNON WOODSIDE, Olin Mathieson Chemical Corp., New Orleans, and QUENTIN W. VANCELEAVE, Crossett Co. chemical engineer, who did much of work of arrangements and expenses.



Wickett ..... Ekman ..... Chidester ..... Glazier ..... Stengle ..... Betz

A. HUGH WICKETT, kraft and semi-chem mills supt., Weyerhaeuser Timber Co., Longview, Wash.; SIGGE EKMAN, sulfite and semi-chem pulp supt., Rhineland Paper Co., Rhineland, Wis., and DR. GARDNER CHIDESTER, head p and p div., U.S. Forest Products Lab, Madison, Wis. FRANK M. GLAZIER is in engineering sales, Rust Engineering, Birmingham; WILLIAM B. STENGLE, asst. tech. director, Crossett Co., was chairman of Hot Springs meeting, and ALLEN W. BETZ, BETZ Engineering Sales, New Orleans, is agent for specialized equipment for mills.



Harris ..... Pitkin ..... West ..... MacLaurin ..... Cash ..... Fahlgren

LARRY G. HARRIS, mill mgr., MacMillan & Bloedel, Nanaimo, B.C., WARD PITKIN, mgr., p and p div., Dorr-Oliver Inc., Stamford, Conn., and PAUL WEST, pulp supt. Thilmany P & P Co., Kaukauna, Wis., "span the continent." DON J. MACLAURIN has just returned to Institute of Paper Chemistry, Appleton, Wis., as head of its pulping section. He was with Gilbert Paper Co. C. R. CASH, now mgr. of kraft mill processes, Fibreboard Paper Products Corp., now 10 years on West Coast, was with Brown in Canada, Champion in Carolina, SVEN FAHLGREN is tech. advisor to Bird Machine Co. and Ekstroms of Sweden.



Chesley ..... Hair ..... Carlin ..... Harter ..... Wilson

KEN CHESLEY, research director, and JAMES C. HAIR, mgr., of Crossett Paper Mills, were among "hosts." TOM CARLIN, supt. of Eastern Corp.'s new kraft mill, RAY E. HARTER, asst. sales mgr., R. T. Vanderbilt Co.'s paper division, and AL WILSON, editor, P&P.

Cann, research chemist at Palatka, and joint author was W. B. Roberson, Hudson associate research director.

The report brought a query as to whether anyone knew about "counter current cooking." There was no reply.

There was much "meat" in this report as Mr. Cann discussed data from the U.S. Forest Products Laboratory, Madison, Wis., Southland Paper Mills and other Southern mills. He gave this data on cooking pine at Palatka (slash 70%, shortleaf, 15%, loblolly, 15%; wood charge—3.1 lbs.; wood/liquid ratio, 1:4; sulfidity, 28%; max. temp., 341 deg. F.; max. pressure, 105 psi, total cooking time, indirect, 150 min.):

The average (3 cooks) for 18% ac-

tive alkali was 46.3% accepted yield, 1.9% rejects; KMnO<sub>4</sub> TAPPI No.—27.0; res. alkali % by volume—2.17; chemicals used, 56.1%.

The average (3 cooks) for 20% active alkali was 44.2% accepted yield, 1.3% rejects; KMnO<sub>4</sub> TAPPI No.—21.6; res. alkali % by volume—2.39; chemicals used, 56.7%.

The average (3 cooks) for 16% active alkali was 46.1% accepted yield, 1.7% rejects; KMnO<sub>4</sub> TAPPI No.—31.8; res. alkali / by volume—1.71; chemicals used, 69.0%.

The average (3 cooks) for 22% active alkali was 41.3% accepted yield, 0.7% rejects; KMnO<sub>4</sub> TAPPI No.—19.9; res. alkali % by volume—2.81; chemicals used, 53.6%.

or sold in wet rolls with about 45% dry content. Amount of waste put into the river must be exceedingly small. Steam costs are comparatively high. Therefore, the evaporators must be fed as high a concentrate of black liquor as possible.

The pre-deliquoring system using a band filter ahead of washers is only used in one other European mill, a German straw mill, but one was reported being built for a U.S. mill. In Sweden a screw press ahead of washers is used.

The band filter has a wire surface on a drum, operates at 150 f.p.m. and handles 145 tons per day. Because of primary deliquoring, lower amounts of black liquor solids come into the washing system. The solids content of black liquor leaving the band filter is 20.7% and it discharges at 19.6% consistency. Only 30 lbs. of salt cake per a.d. ton of pulp is discharged at the final washer due to the fact that less solids come into the system.

#### Keep Reducing Salt Cake Use

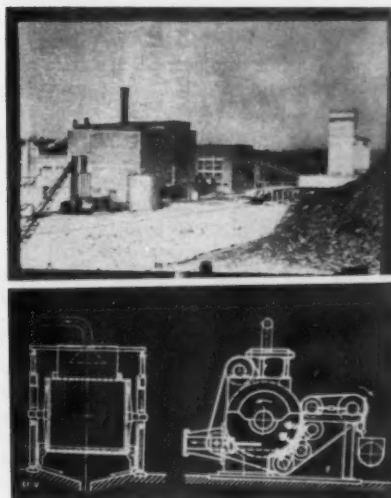
Tony Pesch, of International Paper Co., who believes in the old fashioned axiom that a moderator should contribute to the presentations, said it "is a pity" that U.S. and Canadian papers do not have more diagrams like the Sankey diagrams Mr. Pitkin used, "to make things crystal clear."

Mr. Pesch recalled that when he entered the industry in 1923, use of 800 lbs. of salt cake per ton of pulp was a normal figure and the first use of Oliver filters at Moss Point, La., brought it down to 500 in 1924. Gradually goals of 200, 150 and 75 lbs. have been reached. He predicted "we can reach 50 lbs."

#### Report on Sivola Process For 2-Stage Cook and Recovery

In the Oct. 1958 issue, PULP & PAPER, pages 56 and 57, is a description of the process developed by George B. Sivola, of Helsinki, Finland. John Buchanan, research engineer at Nekoosa Edwards, and Gene Kennedy, of Combustion Engineering Inc., licensee for the Sivola process in North America, were on hand to make the Hot Springs report, in which they collaborated with Dr. Truman Pascoe, Nekoosa-Edwards mgr. of research. The Wisconsin company has successfully used the 2-stage bisulfite-soda process on mixed oak, aspen, birch and maple, also jackpine.

Advantages of high combined SO<sub>2</sub> pulping are combined with the effects of an alkaline cook to yield a versatile process whereby pulps have strength comparable to kraft and yet are easily bleached. A study with aspen showed



TOP LEFT: PULP & PAPER picture of Nettingsdorfer Mill in Austria, as it flashed on screen. LOWER LEFT: Band filter, key to its fine record.

RIGHT: PITKIN and PESCH. Moderator Pesch, at right, predicts more reductions in salt cake use.

## Austrian Mill Brings Salt Cake Per Ton Figure Down Low with a Band Filter

There were several international aspects to the meeting at Hot Springs, Ark., of the Alkaline Pulping division of TAPPI.

Two papers covered developments from overseas—the Sivola two-stage cooking and recovery process in mill scale operation at the Rauma-Repola soda base sulfite mill in Finland (and pre-deliquoring with a band filter ahead of a 4-stage Dorr-Oliver washing system at a mill at Nettingsdorf, 10 miles south of Linz, Austria. Another paper on the Glomera flash drying and high density baling system, told of a technique soon going into a mill in Norway.

Ward Pitkin, director of the pulp

and paper technical division, Dorr-Oliver Inc. presented a paper prepared by top technical and production executives, K. Spiegelfeld and U. F. Knoll, at the Nettingsdorfer Paper and Sulfate Pulp Mill in Upper Austria. About two-thirds of the 61,000 tons of sulfate and groundwood made at this mill is market pulp. The paper mill is 100 years old but a new pulp addition, financed by Marshall Plan funds, was built in 1953.

The Austrian mill pulps mostly sawmill reject fir in six digesters. Knots are removed by a Jonsson screen after 4-stage washing on three Oliver vacuum washers. Pulp is pumped to their own paper machine



## ALKALINE PULPING

thiosulfate in small quantities in high free  $\text{SO}_2$  pulping liquor causes darkened pulp but is less serious in high free  $\text{SO}_2$  liquor and larger amounts can be tolerated.

Flow diagrams showed possibilities of using the Sivola recovery process for mixed spent liquors involving single stage bisulfite or 2-stage bisulfite-soda with kraft, soda or NSSC digestions.

### PULP & PAPER Interviews George Sivola in Europe

On almost the very day this paper was given, a PULP & PAPER editor was interviewing Mr. Sivola in Helsinki. He said he started thinking of his now famous process back in the 1930's at Gould Paper Co. in New York state. He sought to bring sulfite pulps up to the same strength as kraft pulps. From comparing their cooking methods, chemicals used, cooking conditions and particularly pH of these conditions, he gradually came to conclusions of his process.

The problem was to have sulfite cooking with higher pH and to control it. Next step, he recalled in the



Kennedy ..... Buchanan ..... Fuller

### Sivola's Process is Explained

A highlight at Hot Springs was paper on process used in Finland. Here are GENE KENNEDY, Combustion Engineering Inc., who has worked closely with the development for several years; JOHN S. BUCHANAN, research engineer, Nekeosa-Edwards Paper Co., where it is being tried, and R. R. FULLER, Gulf States Paper Corp., who is secy. of the Alkaline Pulping Committee of TAPPI.

Helsinki interview, was to use different species of wood in sulfite, as in sulfate. He said he did his first experiments at Dexter Sulphite Pulp & Paper Co., Watertown, N.Y., in 1935. Then he was technical mgr. of the Finnish Enzo Gutzeit mills, which are now in Russian territory, and he went from there to Rauma-Repola where he installed the first Sivola mill-scale unit in 1952.

cians come to recognize and treat adequately the problems of experiments with continuous variables.

The two most important points he stressed: Efficiency and sensitivity in design. "It can be shown," he said, in using a problem in relating unbleached alpha cellulose to active alkali concentration in a cook, that "doing 12 cooks at equal intervals throughout the range of active alkali is only one-third as efficient as doing six cooks at each end of the range." More realistically, he added, some curvature can be expected—then it is most efficient to do four cooks at each end and four in the center.

"As a general rule, the number of experimental locations should be kept to a minimum consistent with assumptions made about the type of relationship," he said.

It is still necessary to determine the number of experiments required at each location. In cellulose work, he went on, the experimental error is often of the same magnitude as the deliberately produced variation in the system. So, repeated runs at each location will be required. The number of repeats is determined by the sensitivity desired.

### Chip Moisture Effects

A paper presented by Dr. W. J. Nolan of University of Florida pointed out that chip moisture has a beneficial effect in reducing cellulose degradation. Rate of pulping is unaffected by moisture content but a loss in yield and d.p. number occurs when dry chips are used.

### Color Removal from Effluent

A surface reaction method for color removal from kraft bleach effluents is being tested at a big Southern mill, according to a report by F. Berger

## Peroxide After $\text{ClO}_2$ is Recommended

Dr. A. F. Chadwick, supt. of peroxyn products, DuPont Co., a Princeton ph.d., told of the use of peroxide in bleaching kraft after chlorine dioxide. The peroxide causes little degradation and gives excellent brightness stability, he said. A preferred system is in five stages; chlorination, alkali extraction, hypochlorite, chlorine dioxide and peroxide. He said this produces 81 to 91 brightness and strength almost equal to unbleached.

### Flash Drying Technique

The paper on the Glomera flash drying technique gave favorable results on flash drying and high density baling of bleached and unbleached kraft pulps in a pilot plant in Vancouver, B.C. Also the methods used in a mill in Canada and the one going in Norway were discussed. Tom Dunbar prepared this paper for D. & S. Engineering Ltd., Vancouver, B.C. There were two more papers from Canada.

### What's Removed in Pulping

John S. Hart, formerly of Powell River and Ontario & Minnesota Pulp & Paper and now of Canada's Pulp & Paper Research Institute, who gave a Canadian survey on alkaline pulping

of spruce in 1948, came up with a new investigation of properties of kraft pulp from spruce through the cooking cycle in a range of yields from 45% to 90%.

Down to 75%, he said, what has been largely removed is carbohydrates, from 75% to 60% it is only lignin, from 60 to 58, carbohydrates again, and 57 to 50, again only lignin, and below this both are removed, but finally there is only carbohydrates. Southern pine follows this pattern quite closely. Pretreatment of Southern pine is advisable so as not to lose strength.

For both unbleached and bleached spruce pulp, the developed burst increases with decreasing yield, going through a maximum at about 51%. Values, however, are appreciably higher for bleached pulps, with those originating from unbleached yields below about 70% giving exceptionally high strength values.

### New Methods in Statistics

A. F. Johnson of Buckeye Cellulose, discussing advanced experimental design in cellulose experimentation, said books on the subject aren't much good because only recently have statisti-

and R. I. Brown of the National Council for Stream Improvement, Louisiana State University. Caustic extract is treated by application to a pre-coat of hydrated lime on a rotary vacuum filter. A film at the surface of the pre-coat may be continually doctored off exposing a fresh reactive surface. The lime-organic film is dry enough to feed to the kiln with lime mud and color removal exceeds 95%.

#### Introducing Sulfur in System

H. C. Martin of Olin Mathieson Chemical Corp., West Monroe, La., described a process to introduce sulfur to the kraft liquor system which has advantages over suspension of the sulfur in the black liquor or solution in the cooking liquor.

#### Reports on Cold Soda Processes

Cold soda pulping work at the U.S. Forest Products Laboratory, reported K. J. Brown, has produced a pulp of mixed red and white oak suitable for printing paper, as a substitute for Southern pine groundwood. Sweetgum cold soda pulps had about the same strength and brightness. In other work, two red oak species, water and willow oak, produced 82% to 96% yields.

Stone Container Corp., Coshocton, O., is happy with a cold caustic pulp of mixed hardwoods for corrugating medium, according to a paper prepared by Bernard H. Bamer and H. Miller.

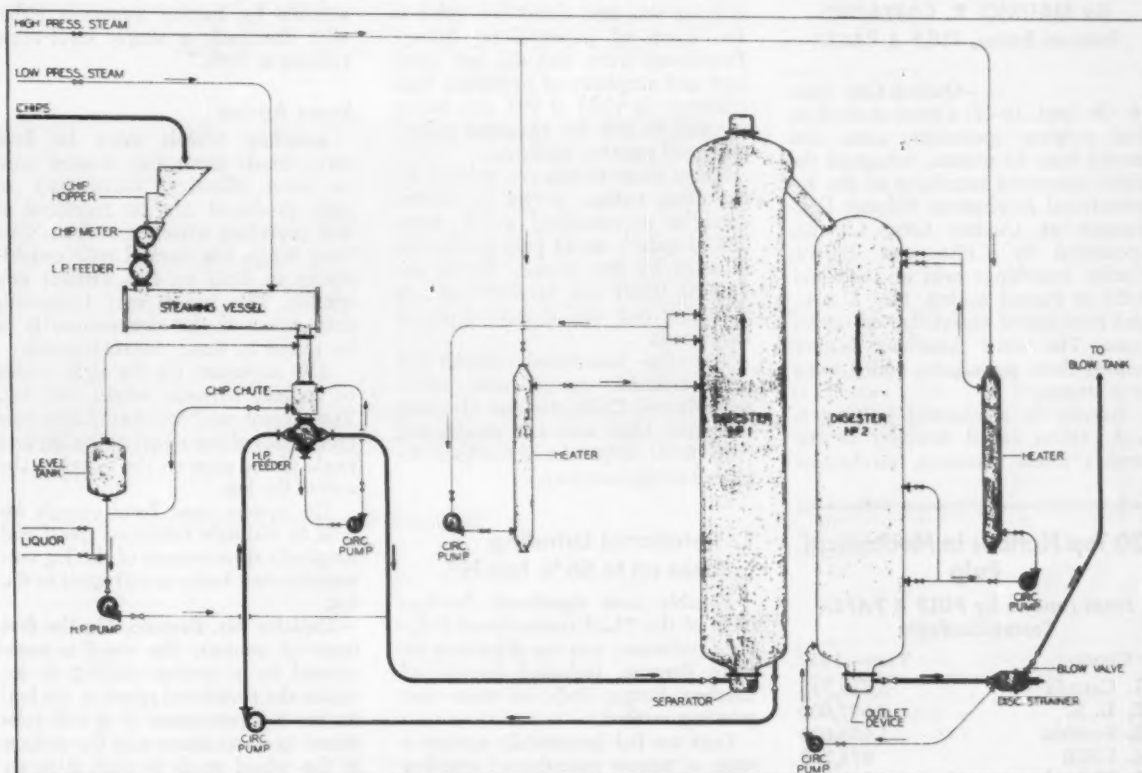
The 70-ton neutral sulfite mill at Finch, Pruyn Co., Glens Falls, N.Y.,

using mixed hardwoods and bleaching three stages was described by R. H. Taylor and N. G. McLean. And finally, the recent successes at the six-year-old semichemical mill of Richmond Pulp & Paper in Quebec, with the pulp used as part of the furnish for newsprint, was told by C. Laviste.

#### Next Meetings Planned For Alkaline Pulping Group

Next year the meeting is to be in the new Hotel Robert Meyer in Jacksonville, Fla., on Nov. 4-6.

In 1960, it is probable the meeting will leave the South for the first time since it was inaugurated 11 years ago and will be held on the Pacific Coast.



## 2-Stage Cooking Introduced in Billeruds Mill

An unusual new experimental installation is in operation at the Jossfors mill of the large Swedish pulp and paper concern Billeruds Aktiebolag.

The equipment for this unit, delivered by AB Kamy, Karlstad, Sweden, is designed to carry out all types of continuous two-stage cooks, both alkaline and acid or combination of the two.

Referring to the flow sheet (above), the chips are fed into the bottom of the first digester by a standard Kamy

feeding line consisting of chip meter, low pressure feeder, steaming vessel and high pressure feeder.

In this first digester the chips move upwards and although this is somewhat unusual, Kamy has had a commercial upflow unit in operation for many years.

From the top of the first digester the chips flow into a second and down-flow vessel, similar to Kamy standard kraft units which are well known

in the U.S.A. and Canada. The pulp is discharged from the bottom of this digester into a blow tank.

Both vessels are equipped with a large number of strainer girdles at various points which allow the unit to carry out the two-stage cook under a great many different operating conditions. The final results should indicate the value of two-stage cooking in general and the comparative values of the various two-stage processes.

# Mechanical Pulping Advances

1. Italy's new grinding method
2. Coarse grinding—refining
3. High consistency screening
4. Sodium borohydride bleaching
5. New flash drying technique
6. Evaluating wet end efficiency
7. A fineness test proposed

By **MAURICE R. CASTAGNE**  
Eastern Editor, PULP & PAPER

—Quebec City, Que.  
● On Sept. 10-12, a team of mechanical pulping specialists, some 300 strong from 14 nations, witnessed the third successful launching of the International Mechanical Pulping Conference at Quebec City, Canada, sponsored by CPPA and TAPPI. Earlier launchings held in 1948 and 1955 at Poland Spring, Me., U.S.A., had contributed knowledge on operations. The third launching further refined these techniques, added some new stages.

Interest in mechanical pulping is high. Often called extender of the world's forest resources, mechanical

pulping was first thrust into orbit in the dawn of papermaking history. Propellants were, and still are, economy and simplicity of operation; high efficiency (a yield of 90% and better, vs. 40% to 50% for chemical pulps); and good printing qualities.

These same factors are today helping other nations propel themselves into the papermaking world. Some 35% of today's world pulp production is made by this process. Giving additional thrust are breakthroughs in bleaching and use of some types of hardwoods.

For the uninitiated, mechanical pulp includes groundwood, steam groundwood, Defibrator and Masonite processes. Cold soda and mechanical pulp from chips are sometimes included in this category.

suitable for further treatment either with chemicals or simply mechanical refining or both."

## Some Advice

Grinding wheels must be kept scrupulously clean and showers must be most effective. Consistency of pulp produced can be regulated at will providing wheels are clean. Cartiere Burgo has worked with consistencies as high as 12% without any trouble. This last is very important, they stress, if the temperature is to be raised by some external means.

Also important are the right angles of contact between wheel and log. The present machines incorporate correct angles of the wheel to the log and angle of the cone on the wheel to the axis of the log.

The system must have enough inertia to maintain rotational speed and longitudinal movement of the log notwithstanding knots or soft spots in the log.

Explains Mr. Bersano, "In the first stage of contact, the wood is compressed by a motion tending to increase the peripheral speed of the log. As the log progresses, it is still subjected to compression and the motion of the wheel tends to push it in an axial direction. Difference in the rotational speed of the log results in a grinding action in the layer of compressed wood in the grinding zone. The fibers are pulled away from the log at some angle to the axis.

"The grinding rate is governed by the feeding speed. At each revolution, the log is subjected to alternating compression and decompression in contacting the wheel and each of the supporting rolls. This tends to loosen the bonds between fibers thus preventing breakage when finally pulled away.

"The groundwood from our experimental machine has good opacity,

## 20 Top Nations in Mechanical Pulp

From reports by PULP & PAPER  
Correspondents

Country	Tons—1957
1. Canada	5,516,713
2. U. S.	2,997,000
3. Sweden	1,058,000
4. USSR	974,700
5. Finland	933,000
6. Japan	891,728
7. Norway	735,032
8. West Germany	665,515
9. France	420,400
10. East Germany	400,000
11. Italy	263,236
12. Austria	174,677
13. Poland	172,040
14. Brazil	110,000
15. Switzerland	110,000
16. New Zealand	101,700
17. Netherlands	100,000
18. Belgium	85,788
19. United Kingdom	68,000
20. Spain	63,800

## 1. Rotational Grinding Uses up to 66% less HP

Possibly most significant development of the Third International Pulping Conference was the disclosure by Piero Bersano, technical director of Cartiere Burgo, Italy, of their new grinding method.

Logs are fed horizontally against a series of narrow cone-shaped grinding wheels. The wheel supplies rotational and longitudinal movement to the log, allowing at the same time free discharge of the pulp.

Big advantage of the system is flexibility. Says Mr. Bersano, "By varying the angles, pressure and abrasive specifications, it is possible to produce a wide range of fiber classifications. Speed of the log can be controlled by varying angles and pressure of the grinding wheels.

"Abrasive specifications can be varied to produce the correct type of pulp in a normal range as is done with pulpstones. Or it can be very coarse to produce bundles of fibers



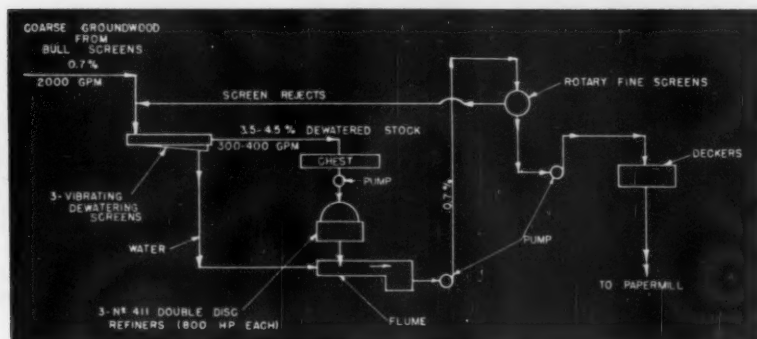
burst and tear factors, comparable but not lower than our standard popular groundwood. Pulp is generally cleaner than standard; because the knots are ground to a powder and are completely dispersed throughout the main body of the pulp and because they are very fine, most of them may be washed away.

"Increasing temperature of the shower water always gave excellent results in respect to pulp characteristics. Whether this is a result of the weakening of the bonds under heat or from the lower solubility of air in water and, consequently, less oxidation on the fiber, remains to be seen.

"We are conducting tests to clear up this important point as it can be of paramount importance. Main difference between our machine and a conventional grinder is that we do not have the heat effect from friction and hence obtain a substantial power saving.

"But at the same time there is strong oxidation on fibers for many reasons, such as solubility of air in cold water, ventilating effect of the wheel, all of which can be controlled, creating in the shower water and in the atmosphere surrounding the wheel ideal conditions for best results.

"Because of the different conditions mentioned, we hope and expect to produce a superior type of groundwood. Our machine presents an ideal situation for impregnating before grinding as we are interested in impregnating only the wood that will be removed by the next grinding wheel. By this method it appears possible to treat any wood, even those that by standard methods cannot be impregnated. Using different chemicals in the grinding water, the soaked bundles of fibers produced by grinding can be easily cooked, resulting in a strong semi-chemical pulp which can be readily refined."



THIS REFINING SYSTEM follows . . .

## 2. Coarse Grinding—Capacity is Boosted

Manistique Pulp & Paper Co. at Manistique, Mich., has made the first commercial installation based on the theory of high capacity, low energy grinding followed by refining. Reason for the change was extra capacity needed due to speed up of its paper machine. The coarse grinding system offered Manistique a low capital means of getting this objective, reported Mill Manager F. S. Hoholik at the Third International Pulping Conference. Results were good:

1—Groundwood capacity has been increased 50% to 75% with the possibility of doubling production per stone at half the normal power input.

2—Resultant coarse pulp is finished to an acceptable pulp in Bauer double-disc refiners.

3—System produces a mechanical pulp equal or better in quality than pulp produced completely on grinders at the same total power input.

4—Pulp produced by this system

has run well on the paper machine and has had no adverse effect either on machine running conditions or paper quality.

5—One grinder has been equipped with a special Norton stone having an average grit of 30; selected to provide a long free pulp, free of chop and having requisite strength potential for maximum strength development in subsequent refining. Average grit of the other stones are 60. Manistique intends to replace these stones as they wear out with the coarser stone.

## 3. High Consistency Screening Steps Up Efficiency

Great Northern Paper Co. has been screening an average of 180 tons per day of groundwood and chemi-groundwood stock of 1.5% consistency using a Shartle 36-P Selectifier screen. Reasons for screening at such high consistency (roughly 3 times nor-

mal) are strictly economic, explained Great Northern's Control Supt. Arthur E. Dentremon and Pulp Mill Process Engineer R. S. Swenson.

Original installations of screening systems at The Northern's East Millinocket, Me., mill were determined by tons per day of accepted stock needed in the mill which in turn dictate the number of machines necessary to do this job. A large amount of water is needed in present day screens to dilute this stock arriving from the bull screens to a range of 0.5% to 0.7% consistency. This thin stock must then be deckered for storage.

If the outlet consistency of the screened stock could be raised threefold, the number of deckers could be cut down appreciably along with the number of screens needed. For a mill making upwards of 500 to 600 tpd of groundwood stock, says Great Northern, the equipment on the market ranges to 60 to 70 tpd screening capacity and 100 to 125 tpd on a large decker. Therefore, one-third the number of screens and about two-thirds the number of deckers would be needed to do this job if screening efficiency could be attained at this high consistency.

### Operating Data for Great Northern High Consistency Screening:

Screen plate perforation—0.062 in., Hub speed—300 rpm, impeller clearance—0.055 in., groundwood bull screened stock, 155°F.

	Inlet	accepted	re-jected
Flow (gpm) . .	2318	2150	168
Consistency o.d. 1.53%	1.41%	2.08%	
Tons per day .	204	183	21
Freeness—			
Canadian standard . . .	—	105	238

Rejects on inlet basis—10.3%, horsepower-instantaneous 59 h.p., Inlet pressure—18.5 p.s.i., differential pressure across screen plate—2.5 p.s.i., deckered stock consistency o.d. (couched stock)—8.60%, deckered stock consistency o.d. (sluiced from couch nip)—3.00%, deckered stock freeness—96.

### Reductive Bleaching With Sodium Borohydride

This was an interesting view that you can bleach pulp both by oxidizing and reducing. This fundamental paper was given by W. C. Mayer, formerly with College of Forestry, State U., Syracuse, N.Y., and now with Personal Products Corp., and by C. P. Donofrio, at the College of Forestry.

It was, says one observer, the kind of fundamental information which the industry needs so that it can take such basic studies and implement them.

The authors explored the reductive

## Report From Quebec

bleaching of mechanical pulp with sodium borohydride through a series of experiments which related brightness development and borohydride consumption with pH, temperature, chemical application and consistency.

Sodium borohydride ( $\text{NaBH}_4$ ) produced a distinct bleaching effect on mechanical pulp and was accomplished most effectively at 35°C and at pH levels developed by unbuffered borohydride systems. Higher pH levels, greater than 10, maintained in bleaching enhanced borohydride stability, but retarded rate of brightness advancement.

A brightness increase of 8 points was obtained with 1.0% borohydride. Prof. Donofrio reported that sodium borohydride confers a distinct bleach-

ing effect on coniferous mechanical pulp, compares favorably with sodium peroxide. Spectral analysis reveals improved reflectance.

An important finding is that only a small proportion of the applied chemical is consumed by the pulp during bleaching. Stresses Prof. Donofrio, "The most important considerations in the utilization of borohydride for reductive bleaching involve the choice of conditions which maintain greatest stability of chemical and at the same time allow reductive reaction to proceed at a practical rate."

A very high pH improves stability but excessively long bleaching times are needed to get satisfactory brightness increases. One delegate observed that sodium borohydride is currently not an economic process because of its "rocket-fuel price."

pressor and make the necessary adjustment to the system.

### Suspension Type Flash Dryer

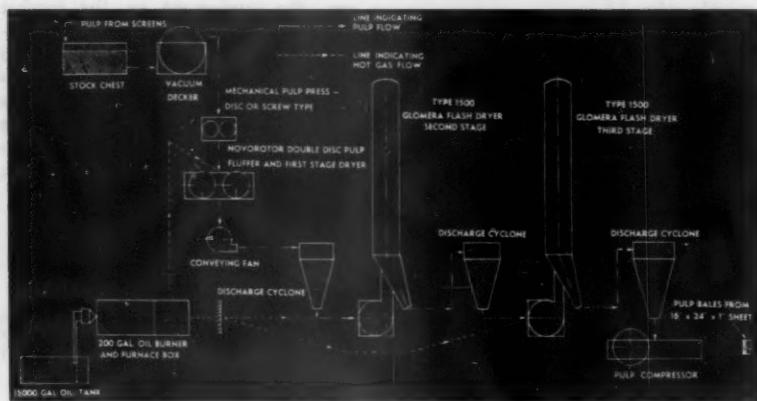
Pulp is carried through the dryer by the drying medium, either combustion gases in an open system, or hot air in a closed system. As pulp comes in contact with the gas most of the heat exchange takes place and surface water is flashed off.

The drying tower presents the necessary time element to permit a complete heat exchange, necessary to extract some of the fiber bound moisture. During the entire process the material is in no lasting contact with the mold structure of the drying equipment, avoiding any charring and roasting effects which would damage the pulp.

Important factors affecting the dryer are: Initial moisture content of the pulp; atmospheric conditions; and quantity of pulp. All are automatically controlled through Bailey Meter equipment.

The Canadian Sumner piston type compressor is fitted with extra large flywheel, adjustable compression box and dc variable speed drive. It has a speed range of 14 to 45 strokes per minute. Dried pulp is discharged in sheets of 24-in. by 12-in. by 1-in. They are baled to 24-in. by 36-in. by 40-in., weigh about 550 lbs. Steel strapping is used.

This paper was by Louis Gagnon, Breakey Mill supt., and Karl Stangl, D. & S. Engineering Ltd.



FLOW SHEET for 100 ton Clomera flash dryer

### 5. Dryer Spurs Expansion with Lower Capital Investment

In 1955 John Breakey Ltd. was stymied when it wanted to boost its Quebec mill capacity from 40 tpd to 80 tpd. It wanted to ship this total output in dry form to increase shipping range and reduce transportation costs.

Its problem was that conventional equipment was "prohibitively high in capital investment and operating cost, and also met with customer objections." In its search for a more efficient, acceptable and cheaper method, the company joined with Canadian Sumner Iron Works Ltd. to investigate the Clomera type dryer.

In 1956, John Breakey put in a pilot plant consisting of a pulp fluffer, Glomera drying tower, 25-gal. oil burner, furnace box and Glomera briquettor. Everything worked out fine but the briquettor which was not suitable to handle the fluffed pulp.

The present system was installed in Aug. 1958 and the first shipments of flash dried, fluff groundwood pulp

were shipped in October. All characteristics of the pulp are retained in the drying process.

#### Three-Stage Drying

Equipment consists of an oil-fired furnace, a Novorotor double disc pulp fluffer receiving pulp at 30% a.d. consistency. Through the fluffer the pulp is brought in contact with hot gases and in conjunction with the discharge fan, the fluffer acts as first drying stage. A 10-ft. cyclone separates evaporated water from the pulp and completes the first drying stage. Pulp then enters the second stream of hot gases and is carried through a type 1500 Clomera flash dryer, separated from the steam and gases in a 12-ft. cyclone and introduced into the third stage dryer, a duplicate of the second.

The drying completed, the pulp enters a compressor through a Plexiglas chute which gives the operator a chance to see the quantity and condition of the pulp entering the com-

### 6. German Technique Quickly Judges Wet End Efficiency

Ease and speed of method makes the German "Rapid Koethen" sheet mould superior to all others, says Cuenter Herwig, development engineer, Finch, Pruyn & Co., Inc., Glens Falls, N.Y., which uses it to determine primary and secondary drainage characteristics of groundwood pulps. Finch, Pruyn does this simultaneously with the preparation of tests strips for wet strength tests.

Developed by Dr. Walter Brecht and Dr. Karl H. Klemm, of Darmstadt Technical Institute, West Germany, the new method permits evaluation of primary and secondary drainage properties under conditions similar to table rolls (primary drainage) and suction boxes and suction couch (secondary drainage). Tests are made while forming a groundwood sheet for the wet strength tests and take up to 30 minutes.

Groundwood quality, said Mr. Herwig, as defined by drainage effect 1, drainage effect 2 and wet strength, has a considerable effect on paper ma-

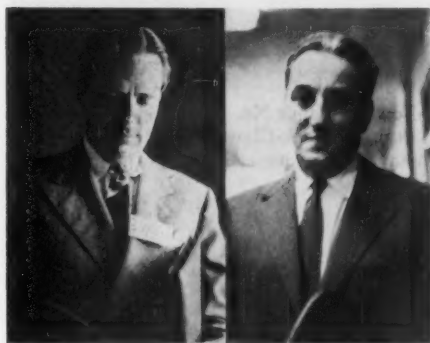
## International Mechanical Conference Attracts Pulping Experts



**FROM BRITAIN AND NEW ZEALAND.** Left is George Thompson, chief chemist, Bowaters United Kingdom Pulp and Paper Mills Ltd. Right, W. A. Hamblett, Tasman Pulp & Paper Ltd., New Zealand.



**FROM IRELAND's Clondalkin Paper Mills** (from left) Sean Carroll, Enda Kelly and Bert Cusack. Their mill has three machines, 100 tpd capacity; grades: "We make everything."



**FROM SWEDEN AND ITALY:** Left, Emil Haeger, gen. mgr., Fridafors Fabriks A.B. Right, technical director, Cartiere Burgo.



**FROM SCANDINAVIA:** (From left) Borje Steenberg, director of research, Swedish Forest Products Research Laboratory; Nils J. Lindberg, secretary, Finnish Paper Engineers' Assn.; Knud Somme, superintendent, Union Paper Co., Norway.

chine performance. Each factor is significant. Testing groundwood pulps for these three factors allows you to anticipate paper machine performance well ahead of the time the groundwood pulp reaches the machine.

To maintain high paper machine efficiencies, advised Mr. Herwig, you should strive for a balance between drainage effect 1, drainage effect 2 and wet strength. Finch, Pruyn management, he concluded, has found confidence in the new testing method and today it is applied not only to control of groundwood mill but also control of pulp preparation in general.

### 7. Freeness Test Lacks Data, Fineness Test is Proposed

Probably the most controversial paper was by Dr. James d'A. Clark, consultant of Victoria, B.C. In his talk, "Fundamentals of Groundwood Evaluation—a New Approach," he suggested replacing or supplementing the "complex freeness-burst-tear-system,

which is discussed but almost defies analysis." Results will be "better understanding of the properties of groundwood and the production of better pulp will become considerably simplified."

"By deductive methods and by skillful observation and experiment," he said, "the art of grinding wood has progressed favorably during the past half century but causes and effects are still very poorly understood. The advent of newer processes such as chemi-groundwood and mechanical pulp from chips has raised new difficulties with the interpretation of the freeness-burst-tear pulp testing system.

#### Fineness Test Is New

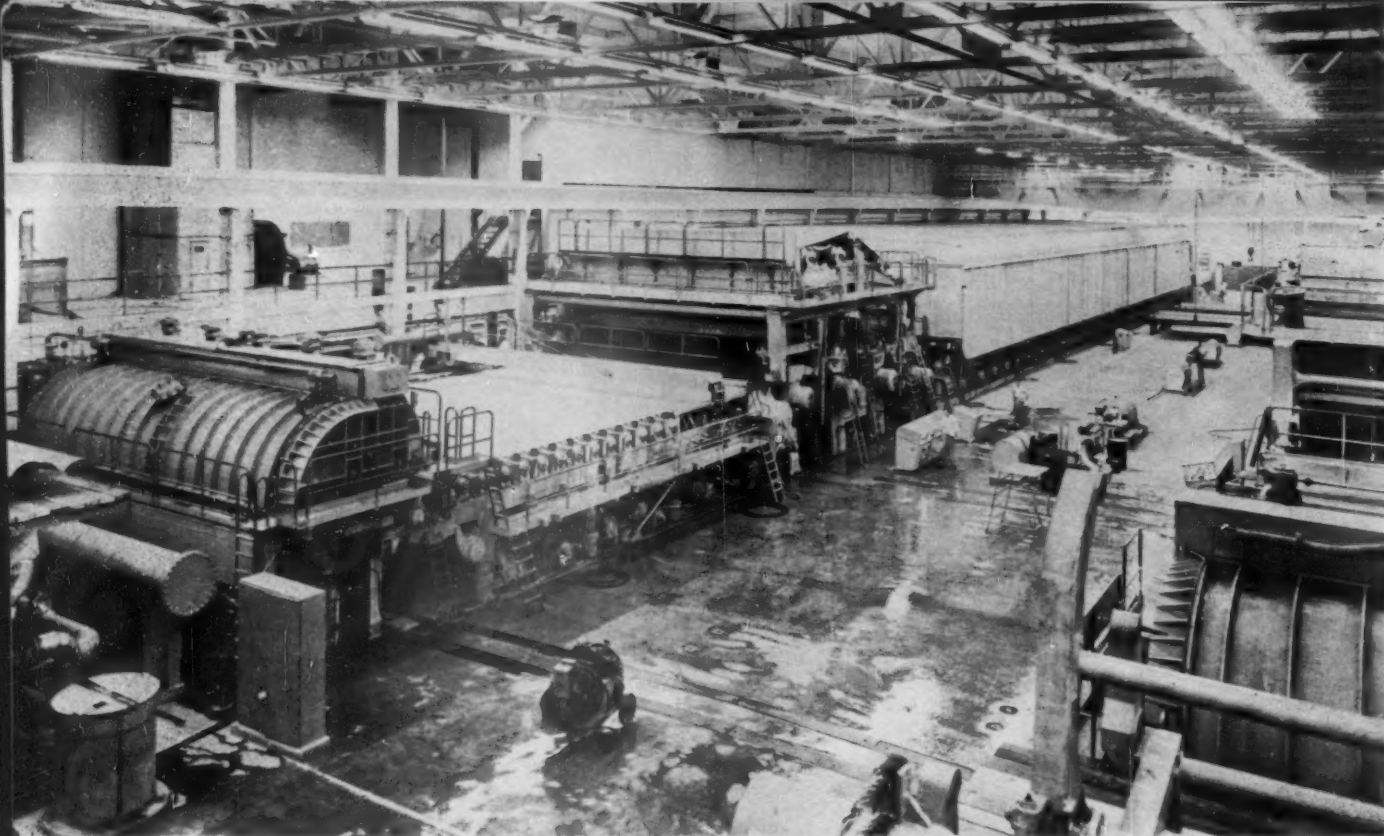
A known concentration of fibers is suspended or dried on a known area of a cell or slide and projected on a screen having lines of a fixed length in a fixed area. The coarser the fibers in the specimen the fewer will be the crossings of their images on the lines and if all the line-image crossings are counted it is possible to calculate the

average coarseness of the fibers very simply.

"Fineness is a very important property of any paper pulp fibers," said Dr. Clark. "It seems evident that with other factors being equal, the sheet with the more slender fibers will have a higher density, burst, stretch, fold, tensile, smoothness and a decreased air porosity. The pulp will also be wetter. Measurements of both fineness and fiber length with suitable modifications of the new TAPPI methods T233m and T234m, can be obtained in minutes. If by some manipulation one makes a groundwood with a lower freeness, the chances are a little better than even that the slower pulp will be superior. On the other hand if one gets a slender pulp, or a longer pulp of the same slenderness, there can be little doubt of having effected an improvement in its quality."

Dr. Clark also suggested that the old-fashioned grindstone be discarded and the industry use an endless waterproof abrasive-coated belt, which might give a finer and longer pulp with minimum input of power.





**"JUPITER"**—CLAIMED TO BE WORLD'S WIDEST PAPER MACHINE—Fort William's No. 4 machine has 342 in. wire. On right in picture is No. 3, installed a year ago, 272 in. wide. Both were built by Black-Clawson. Big Westinghouse motors and Dominion Engineering gears provide the sectional drives for this behemoth of the paper industry.

## Giant Machine – 25% Less HP

Have efficient speed limits been reached? Will size be the answer for future efficiency and economy?

—Fort William, Ont.  
 ● They call this Lakehead edge-of-the-wilderness country "The Land of the Sleeping Giant" for a strange 7-mile long, 1,000 ft. high rock formation, an Ice Age relic, guarding the harbor. It looks like a snoozing behemoth. Now Great Lakes Paper Co., which hit a record \$28,684,000 sales last year, is boasting another giant. One that never sleeps.

Its name is "Jupiter" and it is a mammoth newsprint machine of clean-cut, simple design, with a wire width of 342 inches, designed to reach 2250 fpm, turning out 420 tons a day. When viewed in early October by a PULP & PAPER editor, and some 50 North American industry leaders, mostly presidents and top v.p.'s, it was running efficiently at 1,700 fpm, producing a nice closely formed sheet.

Great Lakes' No. 4, it is being heralded as the "biggest newsprint machine in the world" by owners and

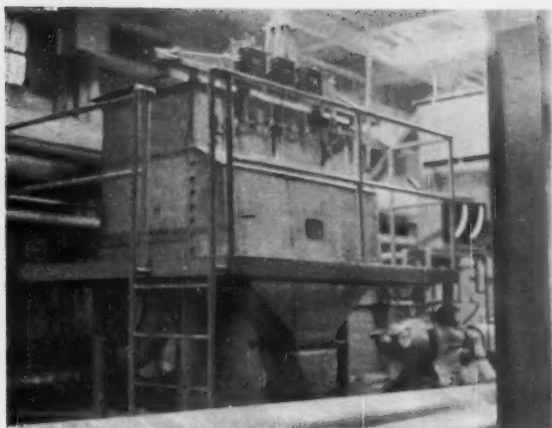
builders, and while it has a competitor in Coosa River Newsprint Co.'s No. 3, which started up last May, the argument is more academic than important. Coosa River has 343 in. face width dryer rolls and its machine is said to be "as high as a three-story house." Well, everyone will settle for the fact that these two new machines are both way out in front of anything else for width and comparable in size.

Great Lakes has probably made the greatest "comeback" since Bing Crosby in adding this giant to three other big fellows. Back in 1928, the one-year-old Great Lakes Paper Co. thrilled the paper world by putting in the then "world's biggest"—its 305 in. No. 2. It lost "the championship" only a year later to a new Bowaters' giant in London, England, 15 in. wider. It took about as long as it did Francis Ouimet to win his second golf championship for Great Lakes to go ahead again—with this year's No. 4.

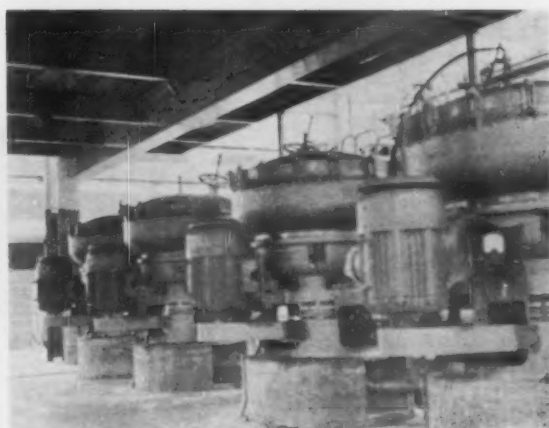
### 25% Wider—25% Less HP

A lot more significant than being a few inches bigger than any other newsprint machine is this claim, as reported to PULP & PAPER by an engineer close to this job: No. 4 is 25% wider than Great Lakes No. 3, but is using 25% less horsepower. In July 1957, Great Lakes started up "Jill" (No. 3), which now runs right alongside "Jupiter." "Jill" (with 272 in. wire width) is running 1,850 fpm (design speed is 2,500 fpm). Great Lakes' first two machines required .93 man-days per ton; these new machines only .66 man-days.

There are important savings in capital investment as well as manpower with the bigger machine. Warwick Fox, president and general mgr. of Great Lakes, and former member of Parliament when he resided in Quebec, told his guests it was a big decision when his company made up its collective mind three years ago to in-



**STOCK PROPORTIONER** designed by Eli Cowan (made by S. W. Hooper in Montreal and Montague Machine Co. in Turners Falls, Mass.), precedes giant No. 4.



**FOUR BIRD CENTRISCREENS** are directly ahead of new No. 4 machine.

vest \$34,000,000 in two machines and other additions including 10 lines of automatic Koehring-Waterous grinders (20 stones), two new 200,000 pph Combustion Engineering high pressure boilers, a new substation reducing 115,000 volts to 4,160 volts for the entire mill, 28 Bird type 12 in. Dirtecs, (built by Canadian Ingersoll-Rand), 14 Sherbrooke deckers, six Sprout Waldron refiners for groundwood rejects, etc.

#### "Machine of Future"

Frank T. Peterson, president of The Black-Clawson Cos., builders of both "Jupiter" and "Jill," said it took a lot of courage for Great Lakes to buy such a wide machine. He predicted that "in the future long run constant types of papers will be made on lighter and wider machines—such machines will be over 300 inches."

"At speeds of 2500 to 2600 fpm for newsprint we have reached maximum speeds but formation will change in the future," said Mr. Peterson. "Higher speeds will not be efficient. We will make 'more of them things on a single unit,' as Henry Ford said."

"Jupiter" was engineered "committee-wise" by Great Lakes and Black-Clawson, said Mr. Peterson, who recalled that one idea they had "talked over, but discarded" was a declining calender stack, tipped to a 45 degree angle, for wide machine production.

#### Simplicity was Goal

This new giant, observers quickly noted, is not loaded with gadgets; there is a minimum of equipment to maintain. The air-loaded pressure headbox, consisting of explosion chamber, distributor rolls and adjustable slice lip, has its front wall combined with a footwalk, making for a narrow wall. Instead of just two hinge points,

it has a series of hinge points, so parts of the headbox are not fighting each other. The distributor header feeds into the mixing chamber, then through a series of holly rolls, and was laying on a very uniform sheet.

The Hydrolyte 350 Fourdrinier is cantilever type and wire change was accomplished in 45 minutes, from stock off to stock on. Wire is 117½ ft. long. Table rolls are 18½ diameter to handle critical speeds.

The press section is straightforward type with vacuum pickup with automatic sheet transfer from wire to pickup felt. There is a single box in the couch and double box in the pickup.

The procurement of granite rolls and other rolls of such great width was accomplished without requiring welding and there are no seams in any rolls. Black-Clawson settled upon lathes and tools of 360 in. width to build its "future machines," and grinders are 72 in. diameter.

Braces and trusses are held to a bare minimum on "Jupiter" and simple but strong members are seen the

length of this machine. For even drying across such a wide sheet, proper ventilation and stationary siphon pipes get the credit. Eli Cowan, Montreal engineer, was designer of the condensate removal system which includes steam joints of special design.

#### Dry End Equipment

There are 55 paper dryers, 14 felt dryers, one lead dryer and one cooling dryer, all of 60 in. diameter and 347 in. face.

These are divided about evenly in four sections. They are cast semi-steel, tested for 150 lbs. hydrostatic pressure with working pressure of 75 lbs.

Following are a seven roll open side calender stack with 44 in. dia. by 338 in. king roll, a Black-Clawson Autoflyte reel to handle 72 in. dia. rolls, an unwind stand with storage rail to accommodate three rolls, and a Black-Clawson No. 350 two-drum 6000 fpm. winder for 44 in. rewind rolls.

Parts of this machine were made in U.S., Britain and Canada. Half of the dryer rolls were made in Watertown, N. Y., and half in Black-Clawson In-

**28 BIRD DIRTECS** for Fort William's new groundwood mill.



## They Saw Big Machine Operating Smoothly at 1,700 fpm



**Karl F. Landegger**  
Chairman  
Black-Clawson

**Frank T. Peterson**  
President  
Black-Clawson

**F. W. Bradshaw**  
Vice pres., exec.  
asst. to pres.  
Consolidated Paper



**Eli Cowan**  
Montreal engineer,  
designer of new  
mill

**Karl Clauson**  
President  
Stora Kopparberg  
Corp.

**Warwick Fox**  
President  
Great Lakes Paper

**Dave Knowlton**  
President  
Knowlton Bros.



**Gunnar Nicholson**  
President  
Tennessee River  
P&P

**Carl C. Landegger**  
Asst. gen. mgr.  
Bagley & Sewall  
Div.  
Black-Clawson

**M. H. (Bert) Jones**  
Vice pres., engr'g  
Ontario Paper

**M. C. McDonald**  
President  
Great Northern  
Paper



## Touring Groups at Fort William

(Left to right) Frank Peterson, pres., Black-Clawson, Gunnar Nicholson, pres., Tennessee River, Charles Seaborne, exec. v.p., Thilmany, Tad Dunn, exec. v.p., Union Bag-Camp, and Karl Elderkin, pres., Bowaters Research; Wing Pepper and Paul Baldwin, Scott Paper vice presidents, with Fred Hurter, head of Stadler, Hurter engineering firm; Al Wilson, editor, PULP & PAPER, with John Orr, dir. of purch., Canadian International Paper; Sam Weber, Bagley & Sewall div., Black-Clawson, with George Dunn, pres., Dunn Paper.

ternational's plant in England.

Ahead of the machine is a new design stock proportioner engineered by Eli Cowan and this is followed by four Centriscreens (made in U.S. by Bird and in Canada by Ingersoll-Rand). There are three Centriscreens serving No. 3 machine. Bird brought out these new screens (see picture) early this year and they have about twice of capacity of previous equipment for this purpose. Each handles 5,500 gpm. They are all Type 316 stainless steel, with double cylindrical baskets, 26 and 36 in. dia., both with hydrofoils and .0625 perforations.

Westinghouse built the motors, mostly of 200 to 400 hp, and Dominion Engineering Co. Ltd. built the gear units for the sectional drives.

The S F machine hood covers the machine two-thirds of the way down and is entirely of aluminum. The depth is what the operators wanted and it will stay as long as Great Lakes isn't losing money on drying.

## New Groundwood Mill Impresses

A remarkably cool and clean groundwood mill was almost as much of a highlight to visitors as the new machine. The ten lines with 20 stones are driven by five General Electric 5,000 hp motors. There are two Bauer No. 440s on groundwood. The original groundwood mill has another seven lines of grinders (14 stones).

No additional sulfite was needed. The expansion meant some reduction of market sulfite pulp. Last year Great Lakes made 41,764 tons of market pulp as compared with 182,000 tons of newsprint, down 6,000 tons in pulp for sale. The mill uses about 18% jackpine, 10% balsam and the rest spruce, with, of course, a higher ratio of jackpine used in groundwood.

Visitors saw a vast new woodyard, with two marshalling yards, gantry stacker and conveyor system at this



mill, located on the Kaministiquia River, seven miles from its mouth. Towering over these wood piles is the steep cliff of another strange formation, Mount McKay, 320 ft. high, with a long plateau on top.

No. 1 and 2 machines at Great Lakes are operating at 1,600 fpm. With No. 3 at 1,850 and No. 4 at 1,700, the mill has produced as much as 1,000 tons on some days. Running at capacity the mill requires 115,000 hp of hydroelectric power. It will use wood from 62½ sq. mi. per year.

### Men Behind Expansion

Top executives of Great Lakes Paper Co. are Percy M. Fox, of Montreal, chairman, and his brother, C. J. Warwick Fox, resident president and gen. mgr. K. A. Miners is v.p. and secy.-treas., Julian H. Merrill, v.p. i/c woodlands, and T. B. Fallows, v.p. i/c sales (both pulp and newsprint). R. S. Fowler, in Chicago, is in charge of servicing newsprint contracts; Eddie Barrett in New York and Ken Fosse in Chicago, service pulp contracts.

Principally responsible for the recent expansion are C. J. "Jeff" Jeffery, mill

mgr., Charles Carter, project engineer, Bruce Jorgenson, plant engineer, Doug Gamton, design engineer. For Black-Clawson and the machines—Larry Moore, chief engineer, Ned Root, Canadian manager, and Bill White, sales engineer. An interested occasional advisor, widely known to the industry, was Chris Michels, who retired five years ago as Great Lakes v.p. for production.

Superintendent in charge of operating the new machine is Jack Brownhill, who came to Great Lakes from the Pacific Coast four years ago.

## "First Automatic Laboratory" Faster, More Accurate than Humans

A fully automatic system for chemical analyses of waste liquor or other effluent from pulp and paper mills is one of the potential uses for the new British-created Analmatic, according to creators of this machine.

There also may be various continuous flow processes of this industry where automatic chemical analyses of liquids by the Analmatic will be useful and valuable, they added.

These "automatic laboratories" were first developed by the United Kingdom Atomic Energy Authority and are now being custom-designed by Baird & Tatlock (London) Ltd., one of the world's largest scientific equipment manufacturers for industrial use. They are in use in Britain, Continental Europe and South Africa. In Africa, they are used around-the-clock to analyze liquids containing uranium

compounds to avoid losses and insure efficient refining. One of the biggest British paper companies is investigating the new equipment.

D. R. Chapman and D. A. Patient, came to America in September to show models at the National Chemical Exposition, Chicago, and then made a four-weeks tour of the continent. They visualize major potentials for its use in pulp and paper.

### Makes pH and Color Tests

One machine will mix and prepare liquids and make both colorimetric and pH or other titration (oxidative or acidic) analyses more accurately and more quickly than is possible by the manual processes of test tube workers in labs, they said.

"Automatic weighing is coming, and handling of solids will be a future

development," said Mr. Patient.

"The Analmatic is ten times more accurate than human skills and many times speedier," said James O. Bengston, president of Chicago Apparatus Co. (1735 No. Ashland Ave., Chicago 22), American distributor.

One machine will make as many as three different analyses of the same liquid, but for a considerable number of tests, additional machines would be required.

An Analmatic will do the work of one skilled analyst per shift. For 24 hours operation the skilled manpower saving is tripled. Mr. Bengston pointed out the freeing of three men from exacting test work would mean a direct labor saving of at least \$20,000 a year. Each system is engineered for the user, and the probable range will be \$2,000 to \$50,000.



**MONITORS 16 POINTS ON PRODUCTION STREAM.** This new British invention, the Analmatic, is being observed here by D. R. Chapman, one of designers. At left of machine are measurement and recording instruments, at right is the replacement of the laboratory.

A typical Analmatic can repeatedly (1) take a measured volume of liquid to be analyzed; (2) add and stir in exact amounts of two reagents that react with sample as required; (3) rest a pre-determined time while reaction takes place; (4) dilute with more of first reagent; (5) add and stir in exact amounts of third and fourth reagents as required; (6) continue stirring; (7) perform a titration (determining concentration of a sample constituent by reaction with a titrant delivered by a burette); (8) measure volume of titrant used by detecting change in its level in burette by photoelectric device; (9) record the result in digital form; (10) return photoelectric device to zero position; (11) drain away liquids used in test; (12) wash reaction vessel; (13) refill the burette with titrant; (14) give a visual or audible alarm if the analysis shows that the sample concentration deviates from pre-determined specifications; (15) reset to (1) for next test. If desired, the alarm can be replaced by a control system that will automatically adjust the process from which the sample was taken.

## At Meeting in Appleton, Wis., Birthplace of Supts. Assn.



Smith ..... Wehr ..... Bunks

HOWARD E. WEHR, division mgr., Mead's Harriman, Tenn., mill and national president, Supts. Assn., stands between two of his Appleton hosts—LEONARD E. SMITH, gen. mgr., Consolidated Water P & P's Appleton division, and ARTHUR H. BUNKS, prod. mgr. at same mill and retiring chairman of Northwestern Supts.



Wagenknecht ..... Radsch

ART WAGENKNECHT, president of A. P. Wagenknecht Co., Thompsonville, Conn., manufacturers of Teflon-covered suction box covers and Wagstock laminated materials for pulp and paper mills, reminiscing with R. M. (DICK) RADSCH, retired vice pres. and now consultant to Appleton Machine Co.



Schoenberger ..... McKay

EDWIN W. SCHOENBERGER, dean of students, Institute of Paper Chemistry, who was luncheon speaker and DICK MCKAY, vice pres.-sales, Holyoke (Mass.) Wire Cloth Co., who represented JAMES SMITH, felt sales mgr., Albany Felt Co., chairman of the Supts. Assn. Affiliates.



Kreiling

FRANK X. KREILING, paper mill supt., Thilmany Pulp & Paper Co., was general convention chairman at Appleton.



Younger ..... Turner

Interesting highlight of Appleton meeting was organized hour-and-half tour of Appleton Woolen Mills and among the guides were CLAIRE TURNER, sales mgr., and FRANK YOUNGER, Middle West sales rep. The latter was elected secy.-treas. of Northwestern Affiliates.

## PIMA, New Name for Supts. Assn., Advocated at Appleton

A strong pitch for a new name for the American Pulp & Paper Mill Supts. Assn.—the name Paper Industry Management Assn. (PIMA for short) is proposed—was made by President Howard E. Wehr at the annual fall meeting of the Northwestern Supts. Division.

On leave for these trips from his duties as manager of Mead's Harriman, Tenn., mill, Mr. Wehr is making the same pitch to other division meetings across the land. His argument is that PIMA will more closely express the character of the group and will make clear that others besides superintendents can join. Decision on the name change will be made by vote of delegates at the national convention in the Shamrock-Hilton hotel, Houston, Tex., June 2-4.

Before the Northwestern Division, at Appleton, Wis., where the AP&PMSA was born in 1919, he also urged a membership campaign. Of 869 mills in U.S. and Canada, said

Mr. Wehr, more than half—456—do not have any members in AP&PMSA. He added that less than half the 1,833 members attend meetings.

He said that since 1919, production of the U.S. pulp and paper industry has increased five times, sales have increased 14 times, wages 15 times and employment four times.

Art Bunks, production mgr., Consolidated's Appleton mill and retiring chairman of the Northwestern division, recalled that 15 attended the first meeting of the association in Appleton 39 years ago last June. W. C. Nash was elected first chairman but shortly retired and was succeeded by the late Fred Boyce, then supt. at Wausau Paper Mills.

### "Learn to Read and Listen"

Edwin W. Schoenberger, dean of students, Institute of Paper Chemistry, was luncheon speaker and he discussed communication problems. Companies have set up courses which have

increased the quality of listening among workers by 25%. Also they can be taught to read faster, taught what to ignore. "Communication involves not only speakers and writers, but we must make headway in reading and listening," he said.

New designs in inlets and head-boxes were discussed by Willard C. Notbohm, Valley Iron Works. Walter Sgerman of Kansas City Star's Flambeau mill discussed motivation among finishing room employees and Gardiner H. Chidester of the U.S. Forest Products Laboratory talked on hardwood pulping techniques.

Besides tours of Thilmany and Consolidated mills, there was a complete guided tour of Appleton Woolen Mills. A highlight of this was the new laboratory section, where many new control or testing devices were shown in use, most of them not known ten or 15 years.

Appleton Machine Co. also was receiving visitors who wanted to see a

new winder it has developed with new airplane-type heat-resistant ceramic brake shoes.

Larry Gibson, Kansas City Star mill, Park Falls, Wis., was elected new chairman of the division. John Hyatt, Rhinelander (Wis.) Paper Co.,

became first vice chairman, Walter Cloud, U.S. Paper Mills, DePere, Wis., second vice chairman, and Art Bernhart, Nekoosa-Edwards, Nekoosa, Wis., secretary-treasurer. John McPherson, mill mgr., Mosinee Paper Mills, was elected a new trustee, serv-

ing with Larry Murtfeldt, Consolidated, and Gus Klaus, Marathon.

Joe Steiner, Emerson-Bolton Co., was elected to the national committee of the National affiliates, and Don Paul, Green Bay, succeeded him as chairman of Northwestern affiliates.



Pittelkow ..... Gray ..... Mills ..... Healy

**OFFICERS OF VISA**—the new Valley Industrial Salesmen's Assn., whose goal is to improve salesmen to the industry in the Lake States and serve the industry better. LARRY A. PITTELKOW, Worthington Corp., membership chairman; ALLEN GRAY, Minnesota Mining & Mfg. Co., president; JAMES C. MILLS, Wyandotte Chemicals, treasurer; MATT HEALY, American Cyanamid Co., secretary.



McDonald ..... Blinn ..... Burchell ..... Jarvey

**UNUSUAL PANEL—P.A.'S VERSUS PEDDLERS.** LES BLINN, The Northwest Paper Co., ED BURCHELL, Minnesota Mining & Mfg. Co., and LAWRENCE JARVEY, Oshkosh Motor Transport, were pitted against three young salesmen in "battle" over the problems of buyer-seller relations. HUBERT McDONALD, Draper Felts, in this picture, took some part, as did others, as a member of the audience.

## New Peddler Group—VISA—Tackles Job To Improve Quality of Industry Salesmen

A new "peddlers" service organization in Wisconsin held an unusual round table discussion on "Buyer and Seller Relationships" which filled a meeting room in the Conway Hotel, Appleton, Wis., during the fall convention of the Northwestern Supts. Division.

The Valley Industrial Salesmen's Assn.—known as VISA for short—was organized some months ago and now boasts 46 members in the Fox River Valley region and is spreading out for more. This was their second meeting on this subject. Their aim is to improve quality of salesmen in this industry and help solve their problems.

This live-wire group invited Foster P. Doane, Jr., vice pres., Bergstrom Paper Co., to a meeting last June, where he told them the essentials that a buyer expects from the supplier: 1, A good product, 2, Delivery as scheduled, 3, Quality and quantity as represented, 4, A good representative, and 5, Sound technical advice and service. Mr. Doane expanded on this theme, during which he listed 12 types of salesmen:

"No. 1, the ideal type," he said, "is friendly, sympathetic, makes calls short and snappy at appropriate intervals, and has something to offer of

interest, or good advice."

The other 11, he said, were:

2. "Like No. 1, but a little too windy,"
3. "Overstays welcome,"
4. "Likes to argue,"
5. "Talks about everything but his product,"
6. "Sloppy Joe,"
7. "Stinks up office with smoke,"
8. "Droopy Willie, who paws and pats you,"
9. "Calls too often,"
10. "Was up all night,"
11. "Poor loser," and
12. "Pans competitors."

Mr. Doane's talk inspired the later meeting in September where three purchasing agents were pitted against three salesmen with Jack Ayers, E. D. Jones & Sons, as moderator. On the p.a. side were Les Blinn, mgr. of purchasing, The Northwest Paper Co., Ed Burchell, purchasing agent, Minnesota Mining & Mfg. Co., and Lawrence Jarvey, p.a. for Oshkosh Motor Transport Co.

Three of the youngest "peddlers" were lined up against them, but while the skirmishing was lively, at no time was there any danger of physical combat. The salesmen were Frank Younger, Appleton Woolen Mills, Don

Skoog, DuPont Co., and John L. Giese, Neenah Brass & Aluminum Foundry, Inc.

In fact, there seemed to be agreement on quite a few points. While some p.a.'s were regarded by the salesmen as uncooperative and serving only to keep them out of the mills, it was felt that generally there were advantages in selling through the p.a.'s. They can help salesmen in seeing production men and p.a.'s are held responsible for delivery of goods, and there you have production responsibility.

Reciprocity selling was called "a dirty word" by one panelist but most agreed it "could be good, if all things are equal, and one doesn't have to accept an inferior product." Salesmen were told to make more advance appointments. Also, to learn more about customers' needs and wants.

One p.a. said gifts and entertainment are given more weight than they deserve and in most mills they have no influence on buying. "Ninety-eight per cent are honest, anyway," said one. Gifts which advertise products received some measure of approval from the panel. Expensive personal gifts were deplored, and one panelist said "it only means you will eventually lose the customer to a salesman who raises the ante."

On Oct. 11 this group had a steak breakfast speaker on highway safety—aimed to keep the traveling peddlers safe and alive.



## You May be in Power Business

Executives of many pulp and paper industries—whether they admit it or not—are in the power business.

T. J. (Jack) Judge, coordinator of power plants and divisional power engineer for all Southern Kraft Division mills of International Paper Co., made this statement in an address before a recent power conference in Boston sponsored by the American Society of Mechanical Engineers.

"Many executives in the paper industry will tell you they are in the business of producing paper and not power," he said. "However, with the average size kraft mill in the South operating 65,000 horsepower in electrical motors and 12,000 hp in mechanical drive turbines from a power plant having a capacity of about 35,000 kw of electricity and

1,000,000 lbs. of steam per hour, they are in the power business.

"During the past decade, electrical requirements of larger mills have grown from 28,000 to 80,000 kw," declared Mr. Judge. "The capacity of generators has jumped from 7,500 to 40,000 kw, and of steam generating units from 200,000 to 500,000 lbs. per hr. For larger power plants, it has been necessary to increase voltage of electrical distribution systems from 2,300 to 13,000 volts.

"The initial steam pressure properly selected to produce all the electrical and mechanical power at heat rates as low as 4,100 btu per kw/hr., or equivalent," he said, "has increased from a high of 850 psig. 750 degrees F. in 1947 to 1,450 psig. and 1,000 degrees F. in 1957."

### Thilmany and Seaborne Honored on 75th Anniversary

Celebrating 75 years of progress and cooperation between company and community, the city of Kaukauna, Wis., sponsored a dinner recently honoring Thilmany Pulp & Paper Co. The mayor presented a key to the city to the honored guest, Charles R. Seaborne, executive vice president of Thilco, praising him as "engineer, inventor, leader, kind man and friend." He left his mark in Longview, Wash., also, as builder of Longview Fibre Co., now one of the world's biggest kraft mills.

A plaque and gavel were presented to Elmer H. Jennings, Thilmany president, and citations were given to Guy E. McCorison and Arthur M. Schmalz, vice presidents at Thilco. About 500 people attended the dinner.

Oscar Thilmany, a native of Germany but an American citizen, founded the company on Sept. 18, 1883, about two years after Kaukauna was incorporated, as the American Pulp Co. The name was changed to Thilmany in 1889. Before Mr. Thilmany, first president of the company, retired in 1901, he employed C. W. Sibley, destined to be one of the motivating forces in Thilmany's expansion during the next 40 years. Monroe A. Wertheimer was named as the new president and retained that position until 1936 when he became chairman of the board. He held that office until his death in 1939.

Through the years the company has expanded and moved more and more into specialties. After WW II a modernization program brought two more

paper machines, Nos. 10 and 11, to the mill and retired Nos. 1, 2, 3, 4 and 5, which had become obsolete.

Thilco continues to progress with the times. Just last month, in conjunction with the Kaukauna Electric and Water department, an experiment in stream aeration at the Rapide Croche power station was announced. It is designed to mix air with water going through the turbines, thus increasing dissolved oxygen content of the stream.



**CHARLES R. SEABORNE**, exec. vice pres. of Thilmany Pulp & Paper Co., honored for his long service to Thilmany and community. He plans to take a less active part in company affairs in coming years.

### Over 100 Years in the Industry

If you mention the name Seaborne, it's not long before the pulp and paper industry comes into the discussion. This family of four have devoted their lives to the industry, serving a total of over 100 years.

Two brothers of Charles R. Seaborne—Rolfe L. and Fred S.—have

risen to the ranks of director and vice president with Canadian companies. A sister, Anne, was associated with a Radcliff Paper Co. of Toronto for a number of years before retiring last year.

R. L. Seaborne also retired recently. As director, vice president and woodlands mgr. of Mersey Paper Co. Ltd. of Liverpool, Nova Scotia, he was responsible for much of the development and operation of eastern Canadian forests over 40 years.

The other brother, F. S. Seaborne, began working for Kimberly-Clark 34 years ago, and is still with this organization. He is vice president and director of the Kimberly Clark Corp. in Toronto, in charge of Canadian operations.

### D. J. Murray Mfg. Co. Marks 75th Year

D. J. Murray Mfg. Co., Wausau, Wis., known throughout America and many foreign lands as a builder of pulp mill machinery, had its beginning 75 years ago last August when it was organized with the late D. J. Murray as president. Mr. Murray served from 1883 to 1921, when he sold his interest to a group of Wausau businessmen.

W. L. Edmonds became president at that time and continued until 1933. He was succeeded by F. C. Boyce, who held the position until his death on June 28, 1953. Arnold W. Plier has been president since that time, and is also general manager.

The company currently is a leading manufacturer of pulp mill machinery, but before its incorporation in 1921, its primary activity was sawmill machinery. As the importance of the pulp and paper industry in Wisconsin began to grow in the early 1900's, the company moved into making equipment for this field. The first D. J. Murray pulpwood chipper was delivered to the Tomahawk Kraft Paper Co. (now owned by Owens-Illinois Glass Co.) in Tomahawk, Wis., in April, 1924.

In 1956 the firm acquired 147 acres of land in the town of Stettin, about two miles west of Wausau, for future expansion of its plant, the first unit to be a model foundry building. Plans are to make a gradual transition of operations from its present location to the new site.

Other officers of the company besides Pres. Plier are W. A. Marquardt, secretary; C. L. Ruder, treasurer; F. C. Boyce (son of the late Fred C. Boyce), assistant treasurer; and P. W. Hoepfer, assistant secretary.

## Measuring and Control of Moisture

The electrical conductivity method, extensively used for continuously measuring moisture content of a moving sheet, has several advantages. These include simplicity, reliability, reproducibility, sensitivity to basis weight change, and applicability to most paper types.

According to Vernon S. Robyn, Minneapolis-Honeywell, Seattle, Wash., years of investigations of moisture measuring methods indicate this to be "the most applicable to the most materials . . . and least affected by other usually present process variables."

The Moist-O-Graph system, based on electrical conductivity measurement, is Honeywell's answer to moisture recording, recording-controlling, or recording-signalling. One or more roller detector elements installed across the sheet at or near the machine's dry end roll on the paper opposite a grounded machine roll in a manner permitting circuit current to flow through the sheet. The traveling paper functions as a series resistance in the circuit and an electronic bridge continuously measures the conductive magnitude.

Mr. Robyn says the most satisfactory moisture control action has been obtained by using "a proportional plus reset type of cascade control system in which the moisture measurement is used to reset the set point of a dryer temperature controller which, in turn, regulates the steam supply to the last section or sections of the dryer."

The Moist-O-Graph system may detect and locate wet areas across the sheet. In that control action concerns raising and lowering the general drying level it does not correct uneven across-sheet drying. However, a need for correction of improper conditions in the machine (condensate drainage, air circulation, uneven basis weight, uneven moisture content of dryer felt,

etc.) is thusly indicated.

This was one of five technical papers presented at Pacific Section TAPPI's fall instrumentation meeting in Everett, Wash. Arthur Dammann, of Alaska Lumber & Pulp Co., presided as moderator.

### From User's Point of View . . .

Edwin A. Woodworth Jr., of Crown Zellerbach West Linn, Ore. Div., reported on two Moist-O-Graph units operating at that plant, both on machines equipped for producing machine-coated printing papers. In that coating does not effectively cover or correct defects or nonuniformities of the base sheet, he stressed the need for moisture uniformity in the uncoated sheet.

Mr. Woodworth states, "Since the Massey (Consolidated) coating process is a 'printing process,' most of the properties required for a first class job of conventional printing are also required in the base sheet for best coating results. Final moisture content of the coated sheet is very important in obtaining finish and smoothness on the supercalenders. Overdrying, if extreme, leads to embrittlement of the coating which will dust and flake off badly. Underdrying may not sufficiently 'set' the coating on the sheet. The wet surface will coat up the afterdryers."

The use of Moist-O-Graphs at the West Linn plant, he pointed out, show them to be valuable operator tools and, if properly used, "will enable him to make the necessary adjustments to assure the best possible product at the minimum cost."

Cliff Mayer, of Publishers' Paper Co., reported improved production on the firm's No. 4 machine since installing a Foxboro moisture controller a year ago. This is a 234-in. trim Fourdrinier machine with pressure headbox, vacuum pickup, and 43 paper dryers producing newsprint at around



Prof. HENRY EYRING, dean of U. of Utah graduate school, conducted Pacific TAPPI's 12th seminar consisting of 2-day sessions in Portland and Seattle. These featured recent research on cellulose and some fundamental principles of physical chemistry.

1660 fpm. The moisture controller positions a 6-in. Mason-Neilan double-seated, V-port valve in the 8-in. steam supply to the main dryer section header. The detector unit is a standard Foxboro condenser measuring moisture as a function of capacitance over a 5-ft. span across the sheet.

This moisture control unit, according to Mr. Mayer, improved the uniformity, increased the average moisture content, and has been an effective tool for the backtender. Because of changes in procedures for taking and controlling test samples, direct comparisons in "before" and "after" data are too inconclusive for precise cost comparisons.

The application of nuclear magnetic resonance (NMR) to measurement of paper was reported by J. M. Cotton, Ridgefield Instrumentation div. of Schlumberger Well Surveying Corp., Ridgefield, Conn. He described the NMR technique as basically spectroscopic in nature and dependent on the absorption of radio frequency energy by atomic nuclei. The NMR technique can be applied to determine moisture in wood, pulp, and paper. Spectral line width studies show clearly the differences in water-binding in a series of bond papers and may be used to characterize them, according to Mr. Cotton.

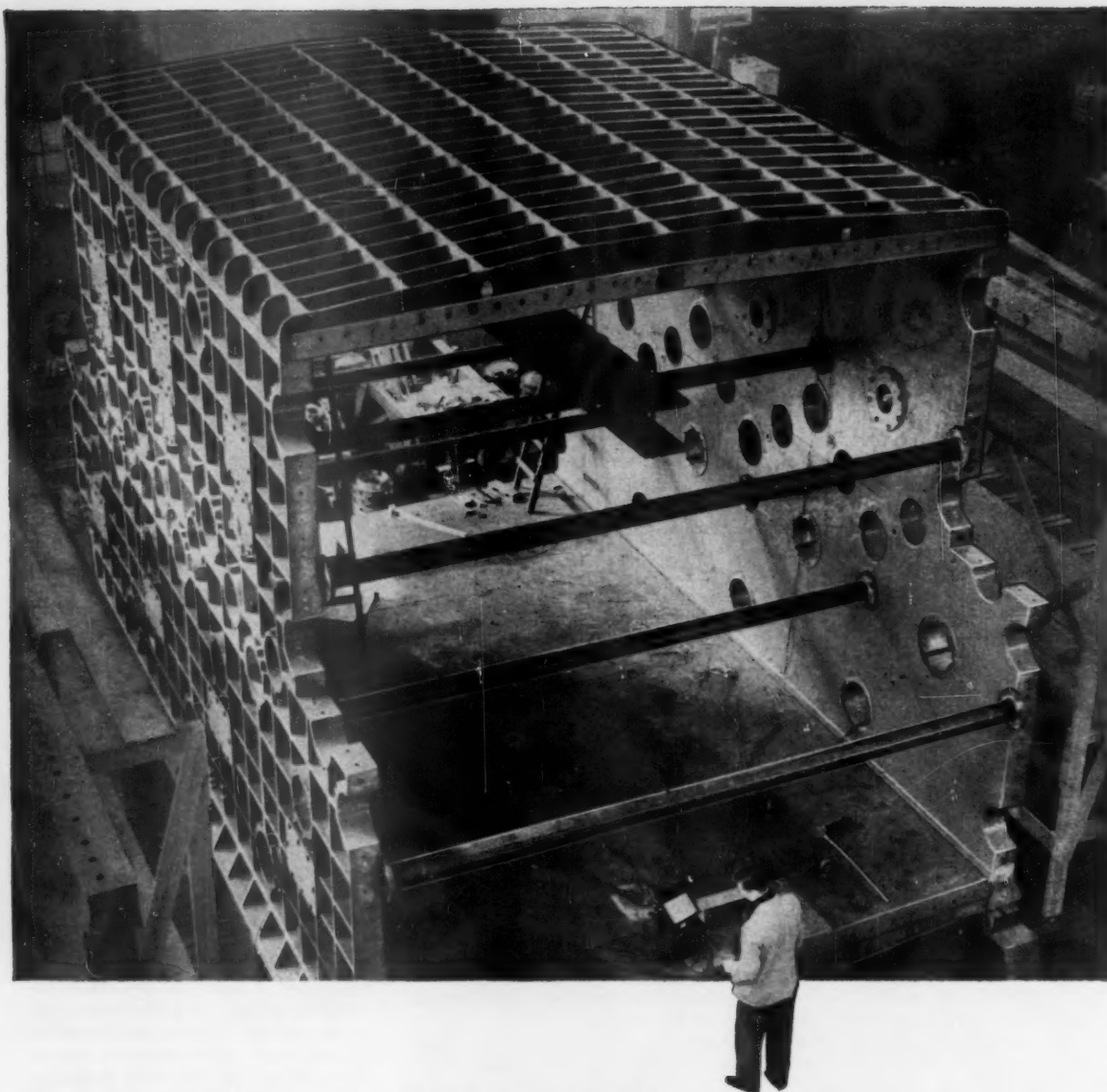


Ward . . . . . Mayer . . . . . Robyn . . . . . Woodworth . . . . . Cotton

**INSTRUMENTATION SPEAKERS** at Pacific TAPPI fall session. (l. to r.) JIM WARD, The Foxboro Co., CLIFF MAYER, Publishers' Paper Co., VERNON S. ROBYN, Minneapolis-Honeywell Regulator Co., E. A. WOODWORTH JR., Crown Zellerbach West Linn Div., J. M. COTTON, Schlumberger Well Surveying Corp.

### Appleton Machine Celebrating 75th

Appleton Machine Co., Appleton, Wis., is observing its 75th Anniversary with a year long program of special events and promotional activities. Theme of the diamond jubilee celebration, which will continue through June, 1959, is "75 Years of Progress Through Specialization." Plans include a redesigned letterhead and envelope, 75th year seal, 75th year meter mail mark and special anniversary stickers for outgoing shipments.

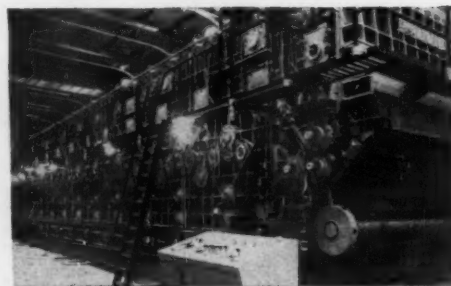


## The Pulp Drying Machine

at Hinton, Alberta, is a

**DOMINION**

The strain gauge test, here being performed on a section of the vacuum chamber for the Dominion Vacuum Drying Pulp Machine, is typical of the modern methods employed by Dominion Engineering to ensure that its products maintain the high standard of performance established over the Company's many years of service to the Pulp and Paper Industry.



PAPER DIVISION

**DOMINION ENGINEERING**  
COMPANY LIMITED

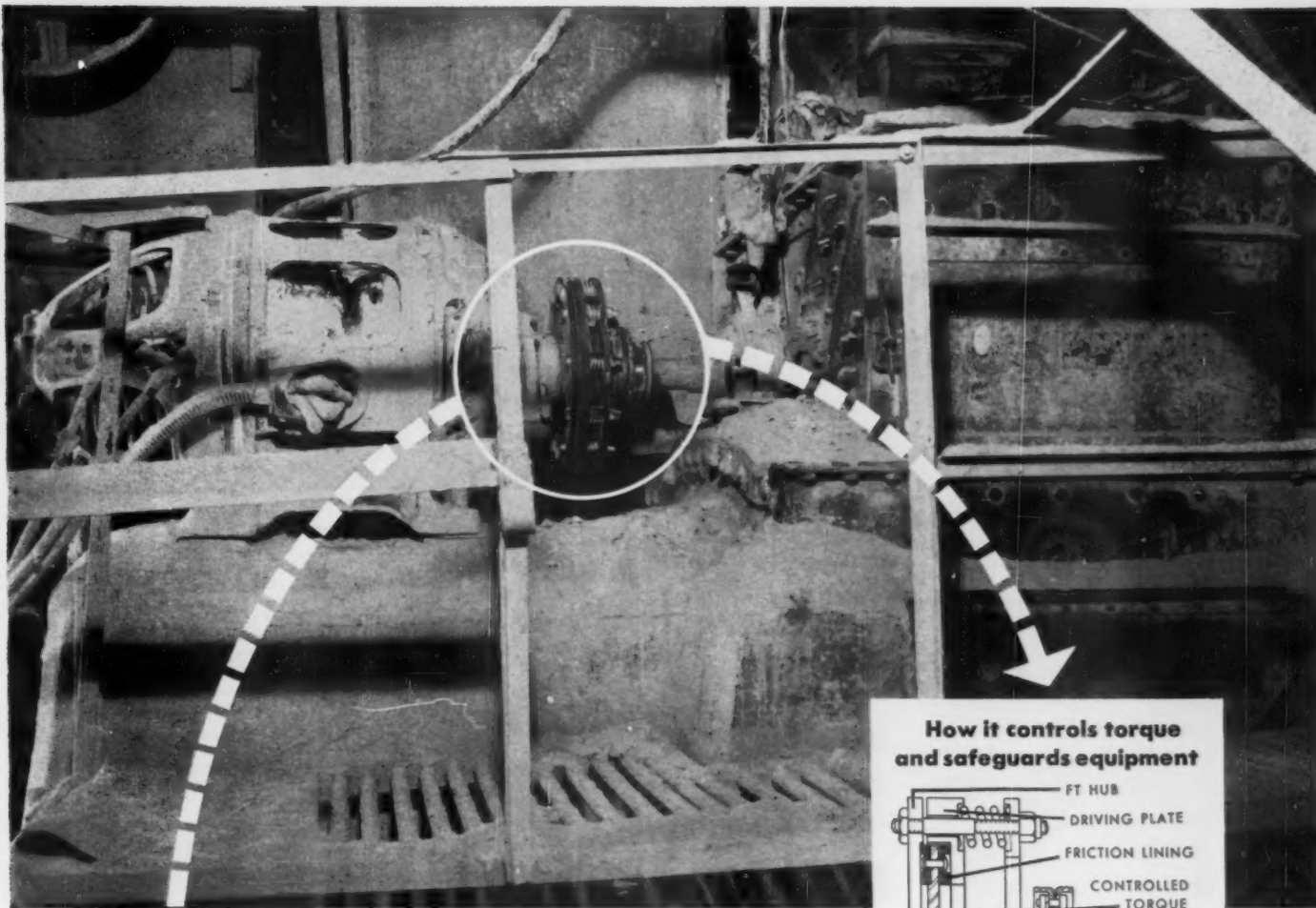
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## Protect machines from overload damage with FALK Controlled Torque Couplings

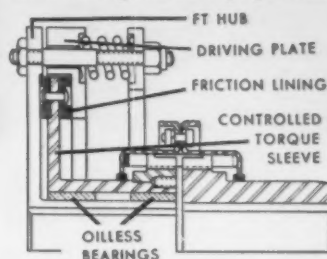
The above picture shows a Falk Controlled Torque Coupling connecting a 150 hp motor to a hammermill. Formerly, when tramp iron got into the mill, it was necessary to rewind the motor at least twice a year. But, in the 2½ years after installing a Falk Controlled Torque Coupling, no motor repairs were required. *That is real saving!*

Wherever overload danger exists, a Falk Controlled Torque Coupling gives positive protection against machinery damage from excessive torque or jams. This unique coupling has an adjustable friction slip clutch which can be set at any predetermined torque limit. Thus, transmission of dangerous shocks is prevented...overloads are limited...shaft breakage is eliminated.

Another big advantage is that, when the cause of the overload is removed, the entire coupling will rotate and transmit power without resetting, and *without replacing parts or repairing the coupling*....And, the Controlled Torque Coupling incorporates the famous Falk Steelflex torsional resilience to smother ordinary shock and vibration, plus the ability to accommodate shaft misalignment....Consult your Falk Representative or Authorized Falk Distributor. **Ask for Bulletin 4100.**

**THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN**  
MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS  
Representatives and Distributors in many principal cities.

### How it controls torque and safeguards equipment



Here (as in photo), the torque-control hub is shown mounted on driving shaft. From this hub, power is transmitted through friction lining to controlled torque sleeve. Load to be transmitted is determined by the (pre-set) pressure on friction lining. In case of overload, this hub still rotates until power is shut off—but the rest of the coupling and the driven machine will slow down or stop.

### Motor Shut-off Control

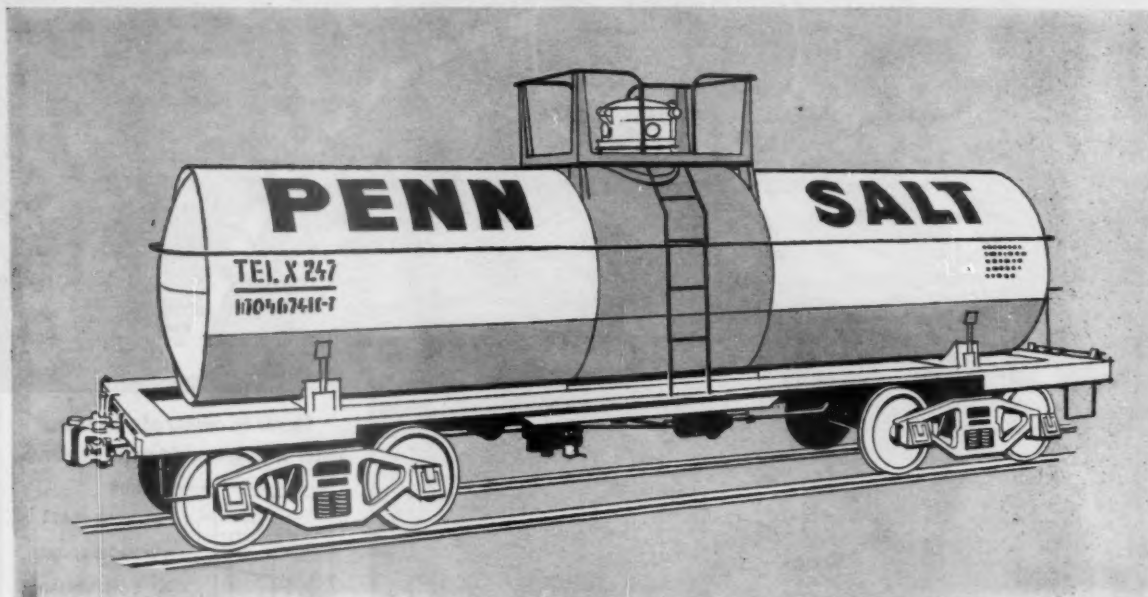
By adding an automatic cut-out switch with V-belt connection to driven shaft, motor can be stopped immediately. With the standard hub mounted on driven shaft, the switch opens the electric circuit when speed of shaft falls below pre-determined value.

# FALK

...a good name in industry

# the Big 4

**Pennsalt Basic Chemicals for Refined Pulp**



- 1 Chlorine**
- 2 Caustic Soda**
- 3 Sodium Chlorate**
- 4 Anhydrous Ammonia**

Long a supplier of Chlorine, Caustic Soda and Sodium Chlorate to the pulp and paper industry, PENNSALT also offers Anhydrous Ammonia.

The ammonia base pulping process, although not a new development for the manufacturing of sulphite pulp, has many advantages: ease of waste disposal, increased production through reduction of cooking time and greater utilization of all woods. These advantages tend to reduce costs.

PENNSALT sodium chlorate produces chlorine dioxide which helps bleach wood pulps whiter and brighter with less deterioration of strength.

In addition to supplying chemicals of uniform quality, PENNSALT offers the assistance of its Technical Service Department.

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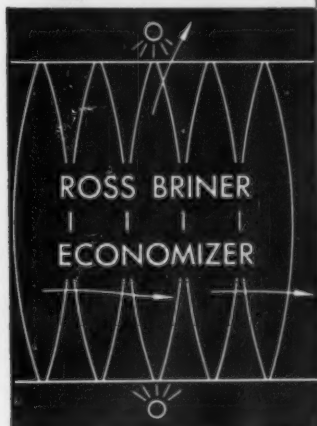
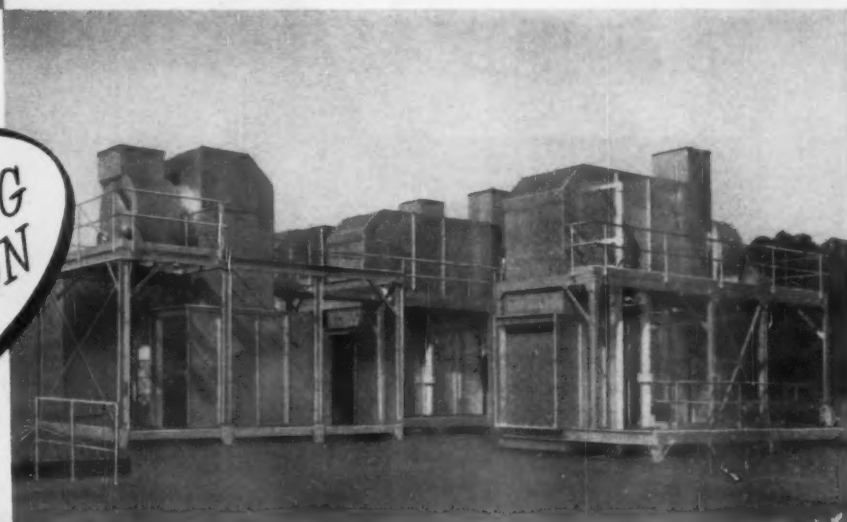
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## **Extract and Re-Use the Heat in Exhaust Vapor**

Two cost-saving possibilities are open to you :

- 1.** use the extracted heat to help warm the incoming air for machine use
- 2.** use the exhausted heat to help warm the water going in to the process

In fact, the heat content of your exhaust vapor may permit you to adopt both cost-saving steps simultaneously.

Check your costs for heating drying air and mill water. If they seem to have reduction possibilities, ask a Ross Engineer to make a study of your operations and to see where and with what advantages the Ross-Briner Economizer can best fit into your production layout. This kind of work is well within his experience and competence for this is dealing with one facet of the fundamental concept of 'Engineered Atmospheres'... in this case, the utilization of heat units carried in the exhaust air-vapor stream.



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uniformly agree  
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**SODIUM  
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FOR CHLORINE DIOXIDE BLEACH

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Papermakers know that Trona has what it takes... large, diversified production — uniform, high quality — dependable service. Vast natural resources for highest purity SALT CAKE make American Potash and Chemical Corporation your prime supplier of this essential ingredient for quality kraft production. Basic also in SODIUM CHLORATE. Trona works through and with the Solvay Division of Allied Chemical and Dye Corporation in the marketing of  $\text{NaClO}_3$  for the high-stage chlorine dioxide pulp bleaching process. Completion of our new multi-million dollar electrochemical plant in Aberdeen, Mississippi, will make Trona the largest producer of sodium chlorate in the western hemisphere. American Potash and Chemical Corporation is keeping pace with the paper industry.

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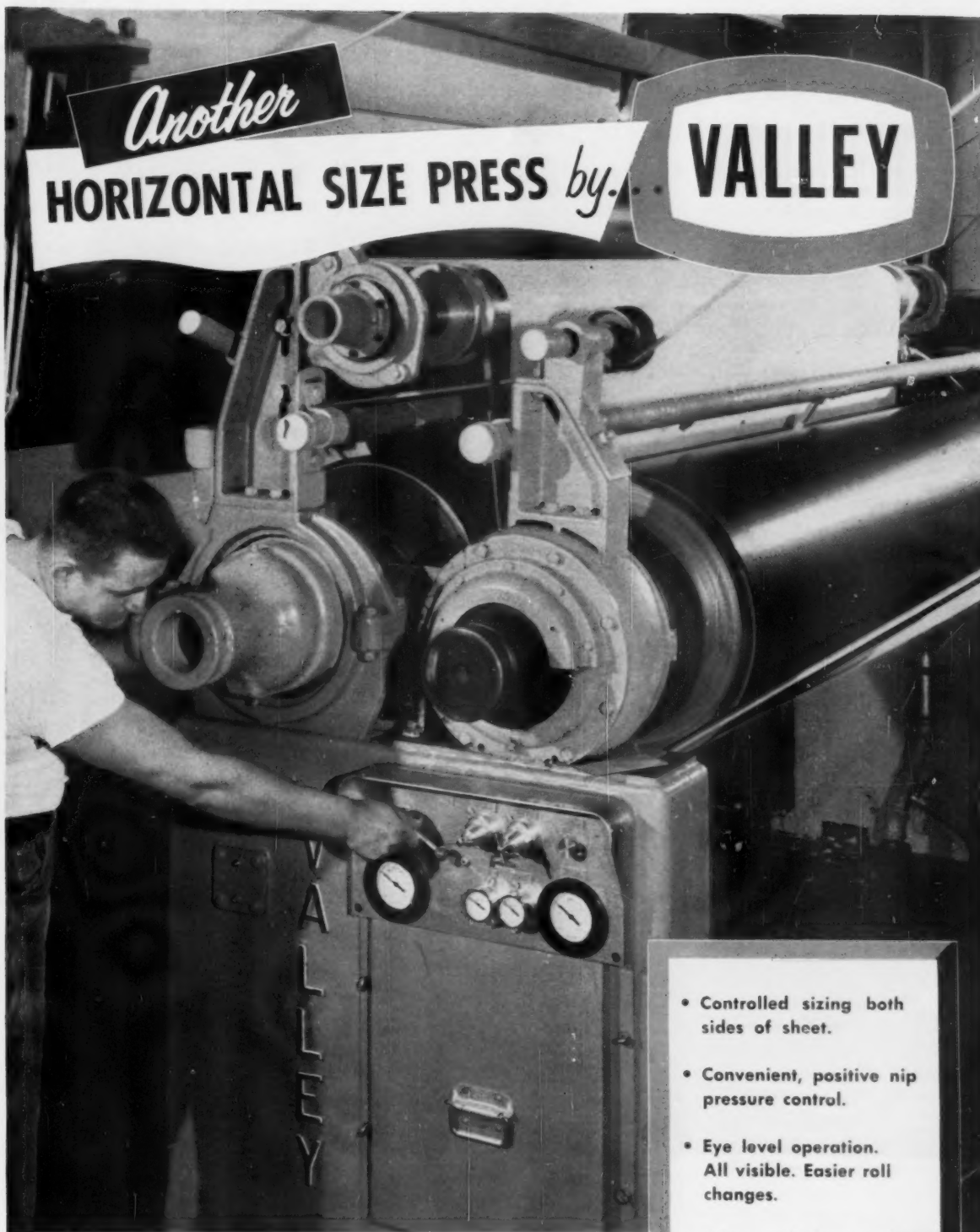
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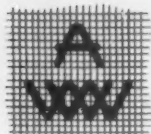
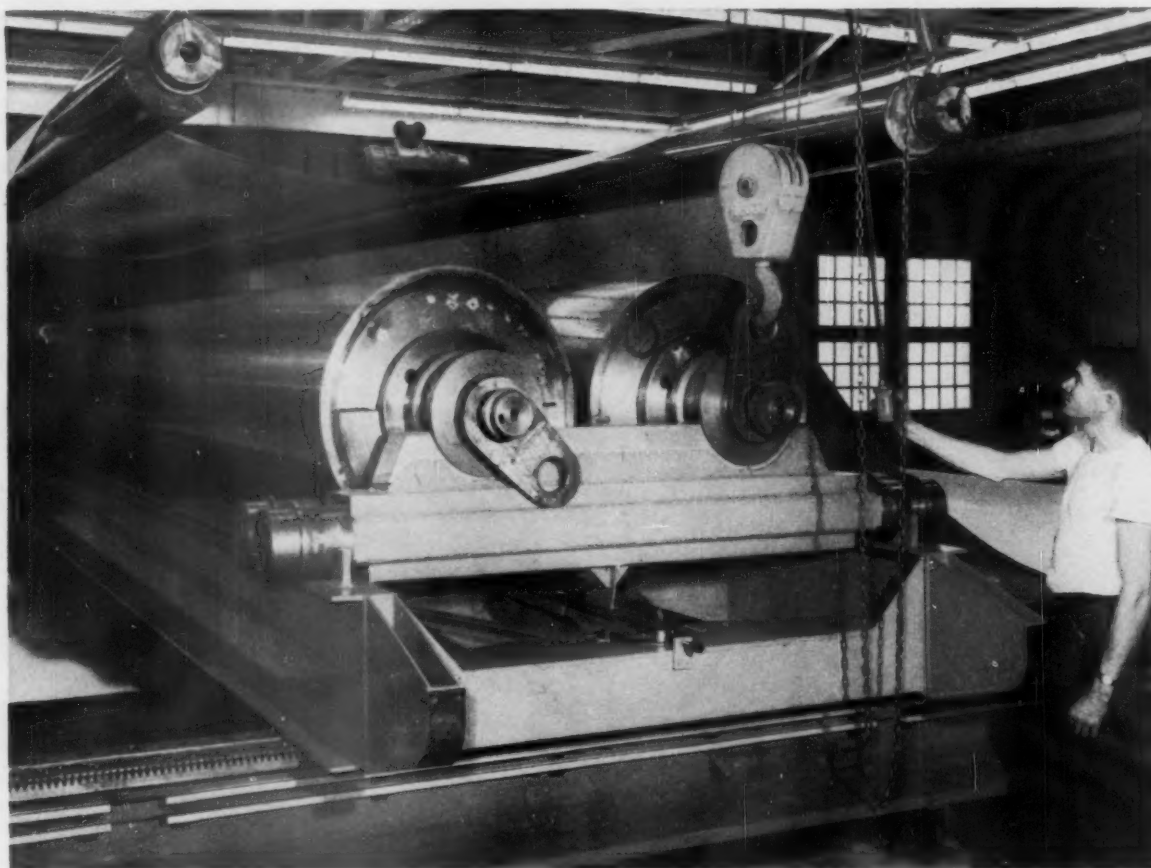
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- Controlled sizing both sides of sheet.
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- Eye level operation. All visible. Easier roll changes.
- Open and clean underneath. No tub or pan.
- Your existing rolls, bearings and drives can be reused.

An Appleton wire is about to receive its final inspection. These two gleaming cylinders simulating the breast and couch rolls of a paper machine are automatically positioned. The great belt of wire cloth will be revolved on these rolls, conformed to a predetermined length, meticulously inspected ... then painstakingly packed for shipment. This careful attention to detail is among the many good reasons why scores of mills choose AWW as their major source of Fourdrinier wire cloth. We invite you to call your Appleton Wire Works representative to learn how our modern equipment and experienced men can best serve you.

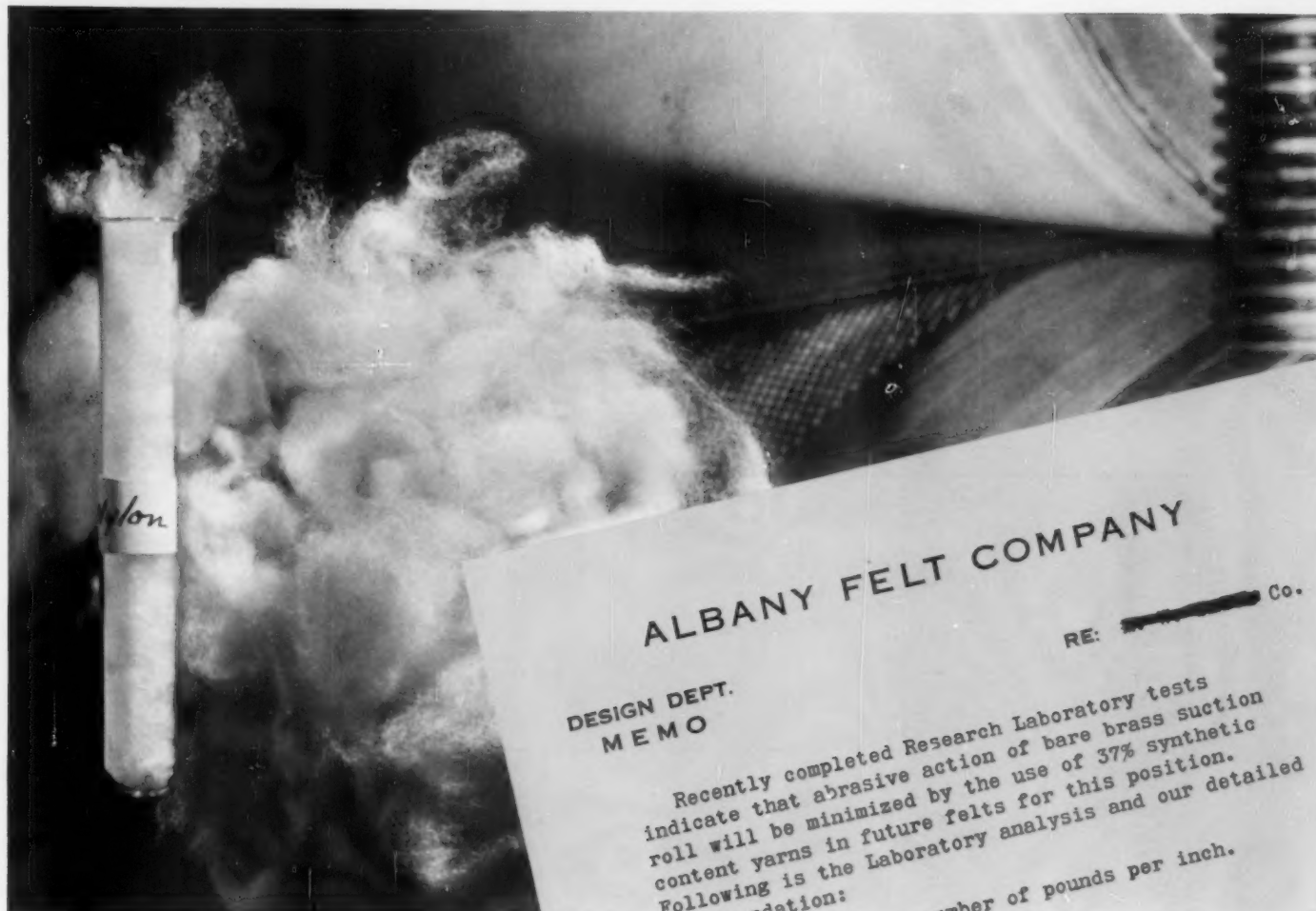


**APPLETON WIRES ARE GOOD WIRES**

Appleton Wire Works, Inc. Plants at Appleton, Wis. and Montgomery, Ala. International Wire Works, Menasha, Wis.



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## TAKE SYNTHETICS...

A dozen years ago, Albany's laboratories produced—and patented—the first synthetic-content felts ever made. Since then, constant research and on-the-machine experience have provided Albany with the industry's most complete bank of knowledge on the *correct* use of synthetics. This includes an awareness that synthetics are NOT an automatic cure for ALL felt problems. Every individual problem or production goal is thoroughly analyzed before a "prescription" is made. But when synthetics *are* the answer, you can be sure that a synthetic-content felt from Albany will do the job better. It stands to reason! We never lose sight of "The Big Picture" . . . helping *you* produce more saleable tons per day.

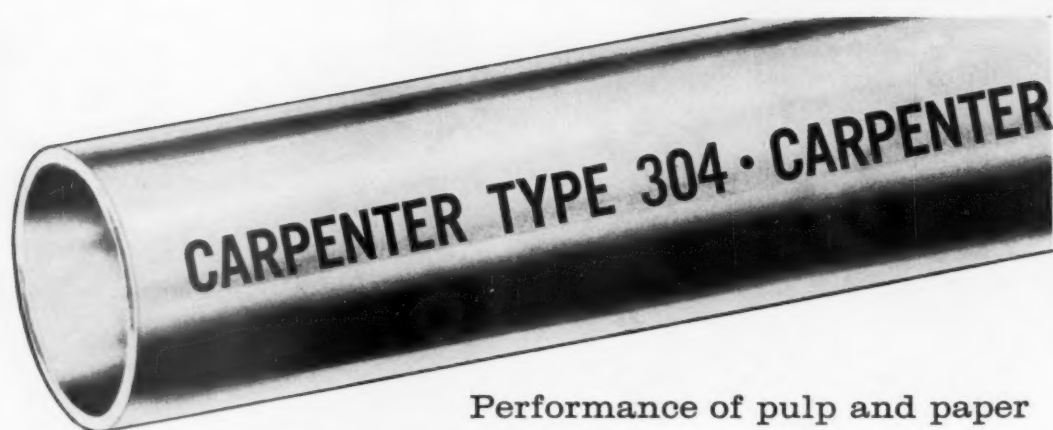


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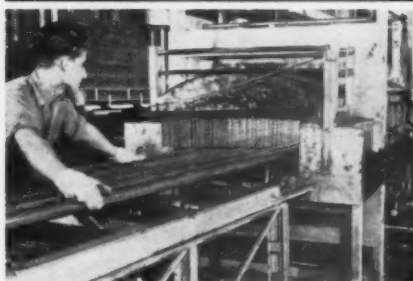
NEW IDEAS FOR BETTER PAPERMAKING — FROM THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS



Performance of pulp and paper mill tubing can be predicted only when these steps are taken



**Carpenter  
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All Carpenter full finished Welded Stainless Tubing passes through these 4 steps, and they add up to a big extra for you . . . predictable performance. These steps mean less cost over the long performance life of the tubing. How much does downtime cost you per hour? Isn't Carpenter cold drawn, fully annealed, pickled and passivated stainless tubing worth the difference? Ask your Carpenter Representative for the full story on paper mill tubing. Or write for Bulletin TD 120. The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

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*From Research to Reality*



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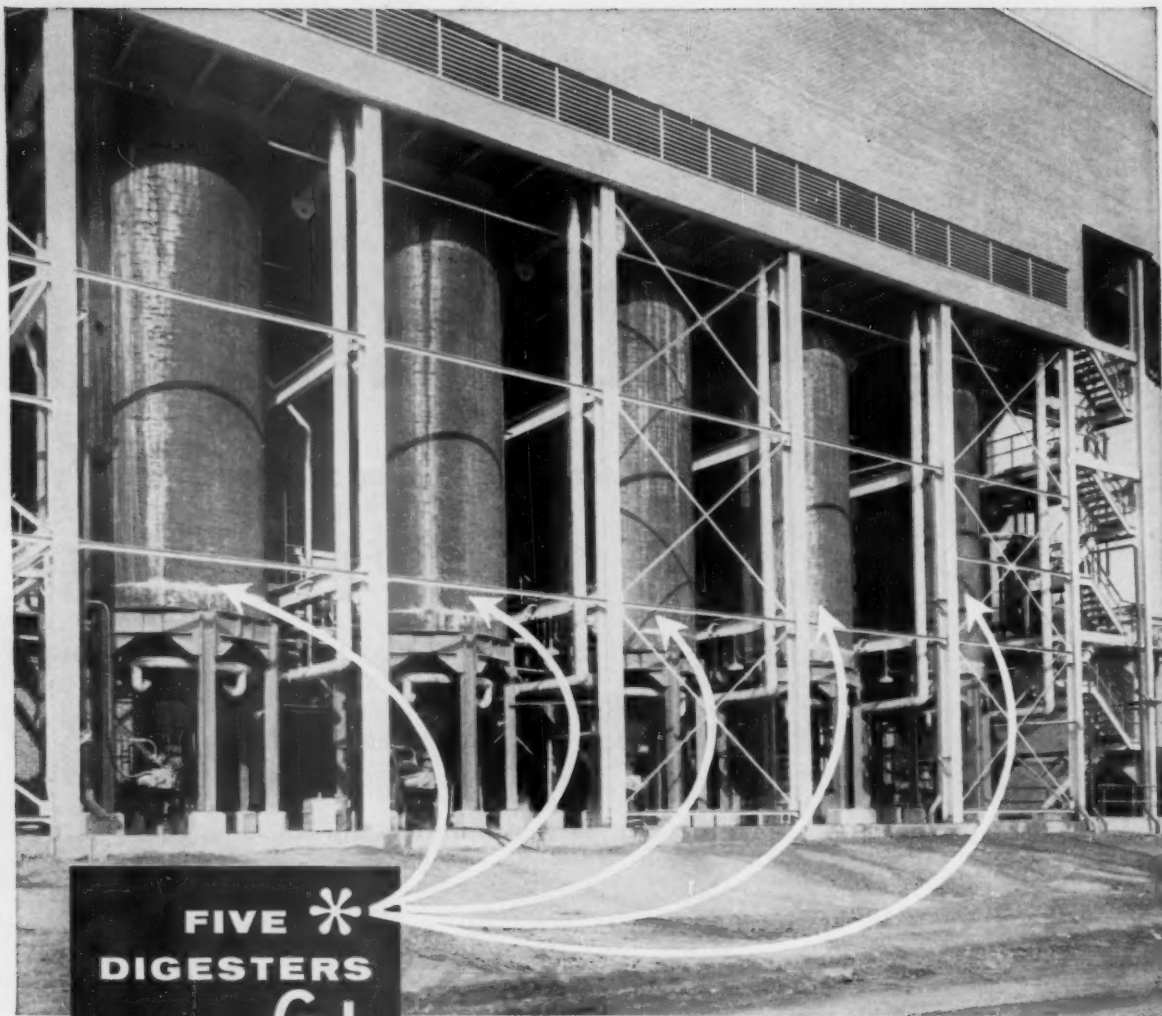
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DIGESTERS**

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... help handle over 400 tons of unbleached sulphate daily for southern mill

Six digesters, five of which were built by CB&I of A-285 Grade "B" fire box steel, handle over 400 tons of unbleached sulphate daily at the Bowaters Southern Paper Corporation's \$60 million newsprint and sulphate mills at Calhoun, Tenn. Each digester has a shell thickness of two inches and weighs approximately sixty-two tons.

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*In cold soda pulp—*

$H_2O_2$  bleaches brighter and whiter...

Experience shows that hydrogen peroxide is an effective bleaching agent for chip-groundwood pulps of all regions in this country.

It gives high brightness, low yellow color, excellent reversion resistance and preserves high yield.

Still another very important ad-

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Shell Chemical has experience bleaching chip-groundwood pulp from a wide variety of species. Our laboratory facilities and field engineers are available for bleaching

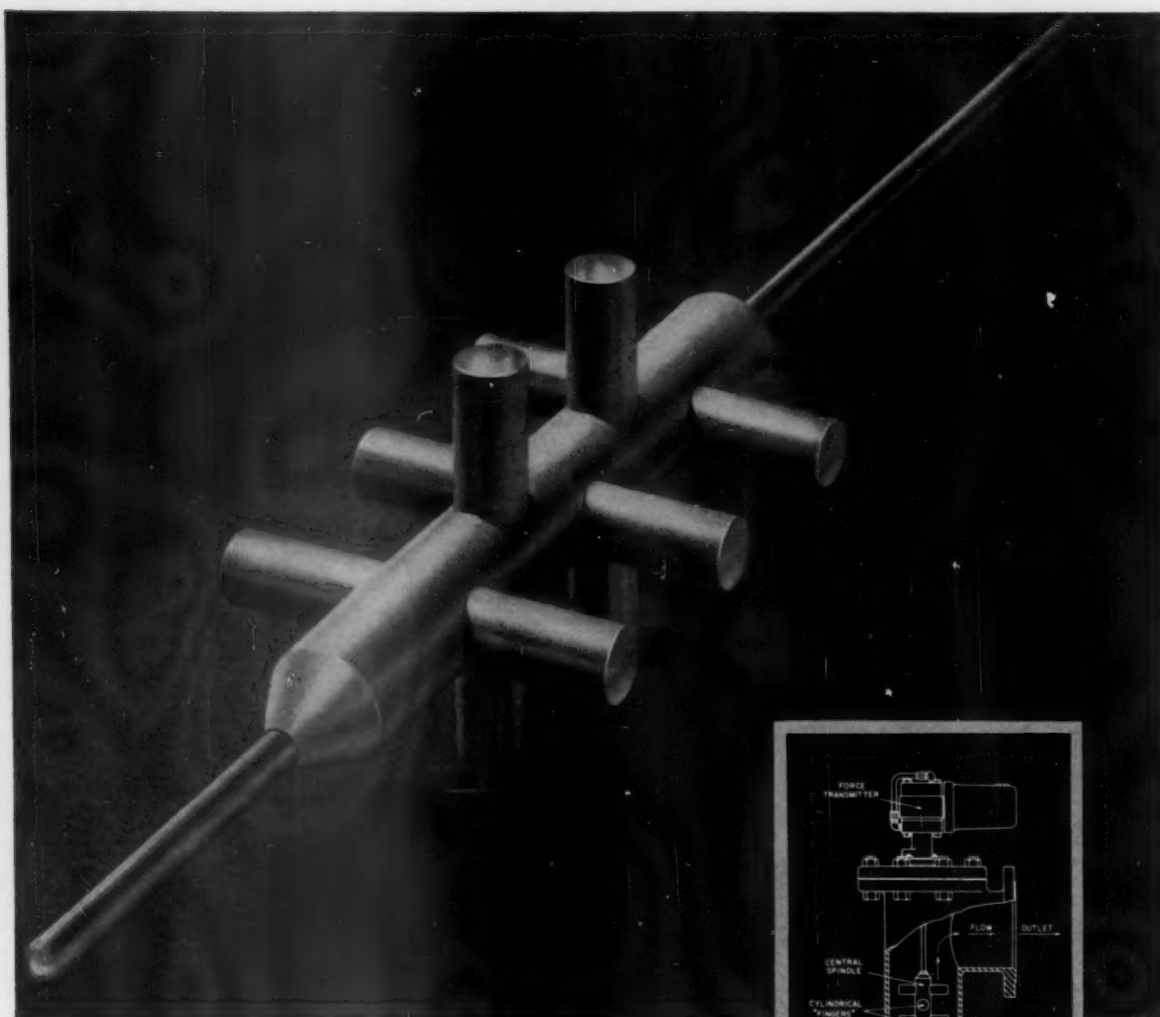
studies and mill trials. Data on single-stage and two-stage bleaching processes can be placed at your disposal.

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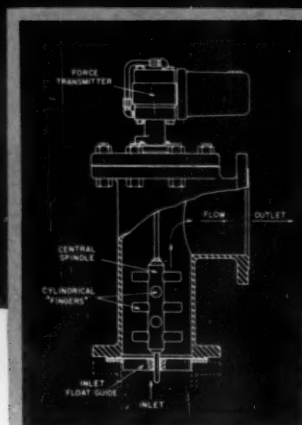




## Sensitive fingers measure and control consistency

The unique object shown in the photo is a specially designed float used in the New F & P Consistency Regulator. This regulator *now* makes it possible to *continuously* measure and *automatically* control pulp and paper stock consistency . . . with complete immunity to velocity and freeness changes. Mounted directly in the process pipe line or in a sample line, this amazingly simple device measures stock consistencies in the range of 2% to 8% with an accuracy of  $\pm 0.1\%$ .

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The many fingers projecting from the central portion of the float cause the flowing stock to be sheared or deformed about them. This kneading action of the fingers creates a force which is sensed and pneumatically transmitted by a force transmitter. The resultant force is proportional to stock consistency. Variations in flow rate over approximately 10 to 1 range do not affect the consistency reading.



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*Complete Process Instrumentation*

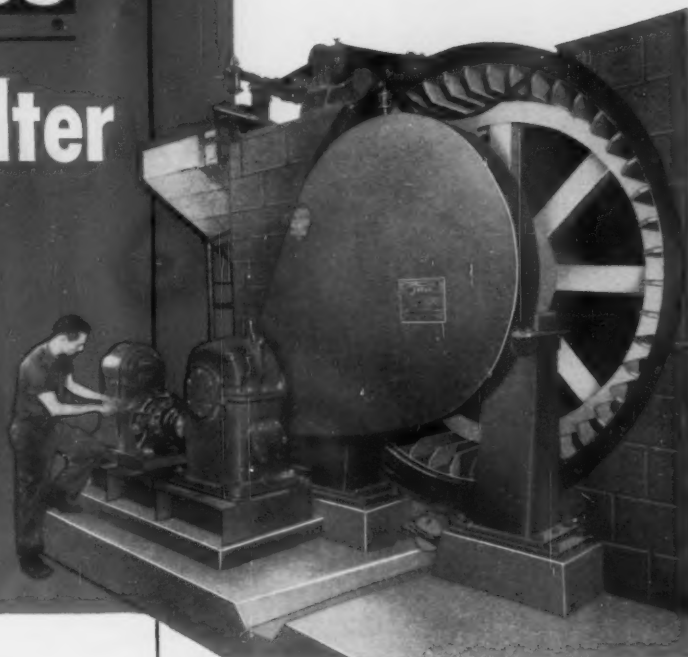


# NEW **Jones** Vacuum Filter

**Saves On  
Floor-Space  
and Labor**

**Steps Up  
Filler Recovery**

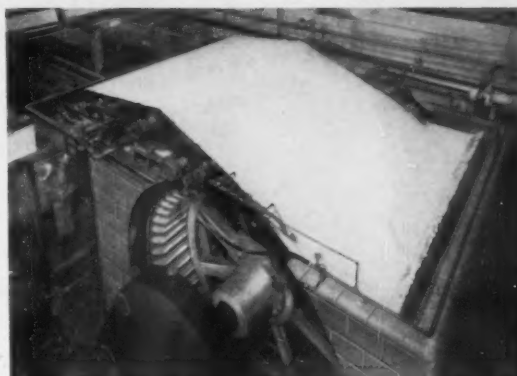
**Eliminates  
Chemical  
Additives**



Designed primarily as a paper machine save-all, this new Jones continuous rotary vacuum filter rates high in efficiency on a wide variety of white waters, including those containing large amounts of filler materials — without chemical additives.

Completely automatic, its performance remains uniform throughout any normal variations in flow and solids content. In all cases this filter has markedly reduced fiber and filler losses — delivering recovered stock at up to 10%-15% consistency and producing clear filtrate (under 0.5 lbs. solids per 1000 gallons) suitable for showers — or discharge direct to sewers without further filtering.

Low retention volume, large capacity-for-floor-space-occupied, and minimum maintenance requirements are among the many other features. For details, see your Jones representative or write



Stainless steel drum with automatically controlled variable speed drive, is 75% immersed for maximum filtering; six-port distributor simply adjusted by external valves; travelling wire provides efficient removal of recovered stock.

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*Builders of  
Quality Stock  
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a SUPER finish  
to your sheet

**SCAPA Synthetic Reinforced\***  
**Cotton Dryer Felt**

Type # 1464-S

Where a superior finish is important, the Scapa Synthetic Reinforced Cotton Dryer Felt # 1464-S is for you. The only felt of its kind available, it is woven with our soft, flat 'English Weave' and imparts a better surface to any paper. The fastest drying felt we make, every thread scientifically reinforced with synthetic blend yarn for much longer life.

Available in any width and supplied with our famous Scapa Staggered-Butt Clipper Seam, if desired. Prompt shipments from our new mill at Waycross, Georgia.

\*U. S. Patent Application Serial No. 524410.

Can be furnished with our famous  
**GREEN DACRON EDGE**  
when desired (U. S. PATENT 2,612,190).  
These reinforced edges of pure,  
spun Dacron will outwear the felt,  
under the most severe conditions.

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**Master Key...**



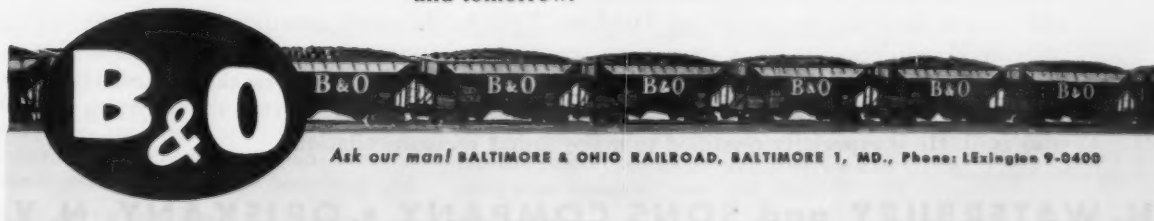
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• Bituminous coal contributes to plant operating profits by its *productivity* and *stability*. Virtually limitless supply, plus most modern mining methods, gears production to *any volume demand*.

Accessibility and increasingly efficient burning equipment mean economical, constant-cost for today and tomorrow.



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# Rensselaerville WOOLEN MILL.

The subscriber would announce  
to his friends and the public, that he still continues at the a-  
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## WOOLEN GOODS,

suitable for customers.

Those who raise Wool will find  
it to their advantage to have their own Wool made into such  
cloths as they may want.

## Cloths & Flannels

Kept constantly on hand for sale at the lowest cash prices,  
and to exchange for Wool.

Roll Carding done in the best  
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☛ All orders promptly attended to,  
and satisfaction warranted.

**H. WATERBURY.**

Rensselaerville, May 8, 1862.

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*"All orders promptly attended to, and satisfaction warranted."*

That was the spirit of the notice published by H. Waterbury in 1862 to seek business for his woollen mill. Today, as then, the first consideration of H. Waterbury and Sons Company is customer service and satisfaction. In our modern mill we have many new and unique facilities for producing Oriskany Felts to the exact specifications for our customers' requirements. In a continuing series of announcements, we will show how our expansion program offers you the finest quality Felts for papermaking. And if you have a special felt problem, ask us to send one of our Sales Service Engineers to your mill. He is especially qualified to make sound recommendations.

**H. WATERBURY and SONS COMPANY • ORISKANY, N. Y.**

## Mead customers worry about pulp?



**-emphatically no!**

*Brunswick Bleached Pine Kraft was used to make this illustration*

Supply . . . delivery . . . quality . . . Mead pulp clients are assured of all three. Vast forest reserves and eight great pulp mills make Mead the dependable source of supply. Constant attention to the importance of service means deliveries are made on time. Modern, extensive research facilities and

devotion to quality are extra insurance that Mead pulps meet or exceed any standard. Whatever kind of pulp you require, chemical or mechanical, from hardwoods or soft woods, bleached or unbleached, the Mead representative can show you why we can meet your demands best. Call him.



**MEAD PULP SALES, INC.** • Distributors of Wood Pulp • Bleached and Unbleached Chemical and Mechanical Wood Pulp  
230 Park Ave., New York 17 • 20 North Wacker Drive, Chicago 6 • 118 W. First St., Dayton 2 • 1504 Sherbrooke St., W., Montreal, Can.



*A plant built on the philosophy of "don't accept anything at face value"...*

## Tidewater's "Refinery of the Future" Uses 471 Fast's Couplings to Reduce Maintenance

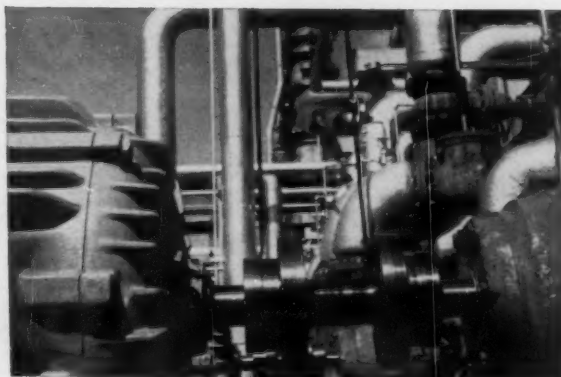


**I**N PLANNING Tidewater's Delaware Refinery, all equipment purchases were examined from every angle . . . capital investment, manpower, maintenance and reliability. Fast's Self-Aligning Couplings were used throughout because they met Tidewater's exacting demands.

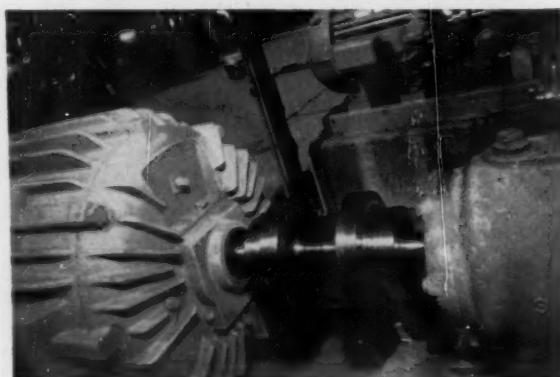
Tidewater's equipment design policies were established by survey teams that visited refineries all over the country. They carefully appraised each plant and asked operators what improvements they would make and what features they would retain if they were to redesign their drives.

In 471 applications at this refinery, Fast's Couplings guarantee mechanical flexibility that eliminates costly shutdowns and expensive shaft replacements. Fast's have the reputation of frequently outlasting the equipment they connect. This means savings in maintenance and down-time . . . in addition to protecting costly equipment against errors of alignment.

Nearly 40 years of coupling experience qualifies Koppers to solve *your* coupling problem. Write today for full details to: KOPPERS COMPANY, INC., Fast's Coupling Dept., 2711 Scott Street, Baltimore 3, Md.



Fast's Couplings give dependable, trouble-free service throughout Tidewater's entire production facilities.



This Fast's Coupling drives a pump delivering heavy naptha to the Solutizing plant.

Engineered Products

Sold with Service



THE ORIGINAL

***FAST'S Couplings***

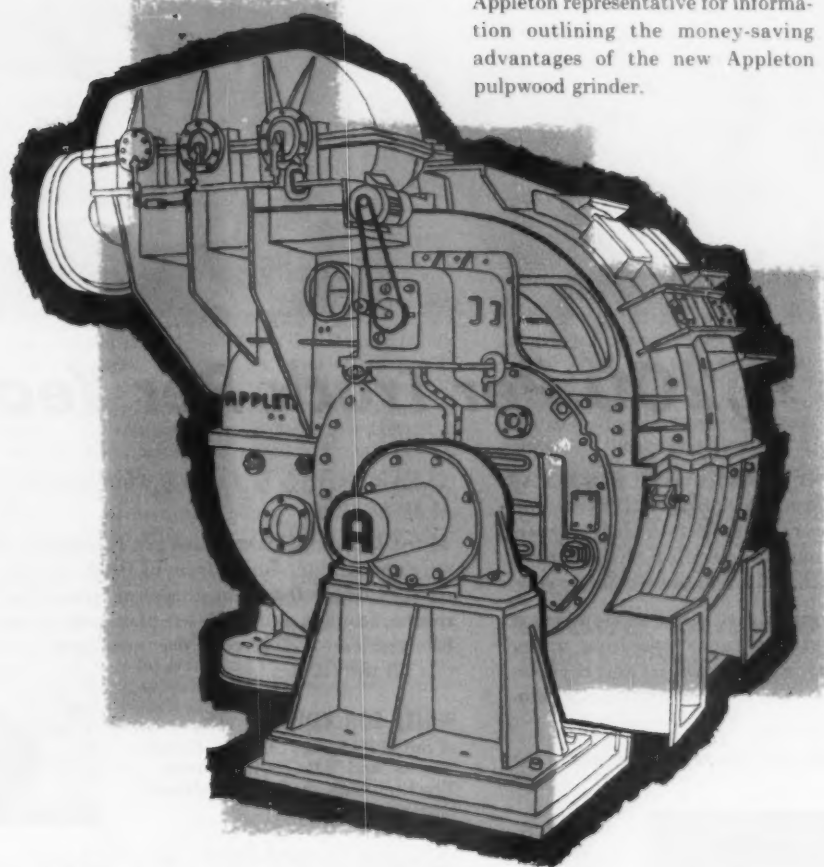


**A**

adaptable for completely  
automatic log-handling

### NEW APPLETON RING-TYPE GRINDER

Appleton's outstanding pulpwood grinder has now been redesigned with more horsepower, more capacity, greater speed than ever before. This heavy-duty grinder increases log room efficiency and production . . . gives greater capacity per horsepower and can be adapted to automatic wood feeding . . . cuts operating labor costs on all grades of groundwood pulp. Ask your Appleton representative for information outlining the money-saving advantages of the new Appleton pulpwood grinder.

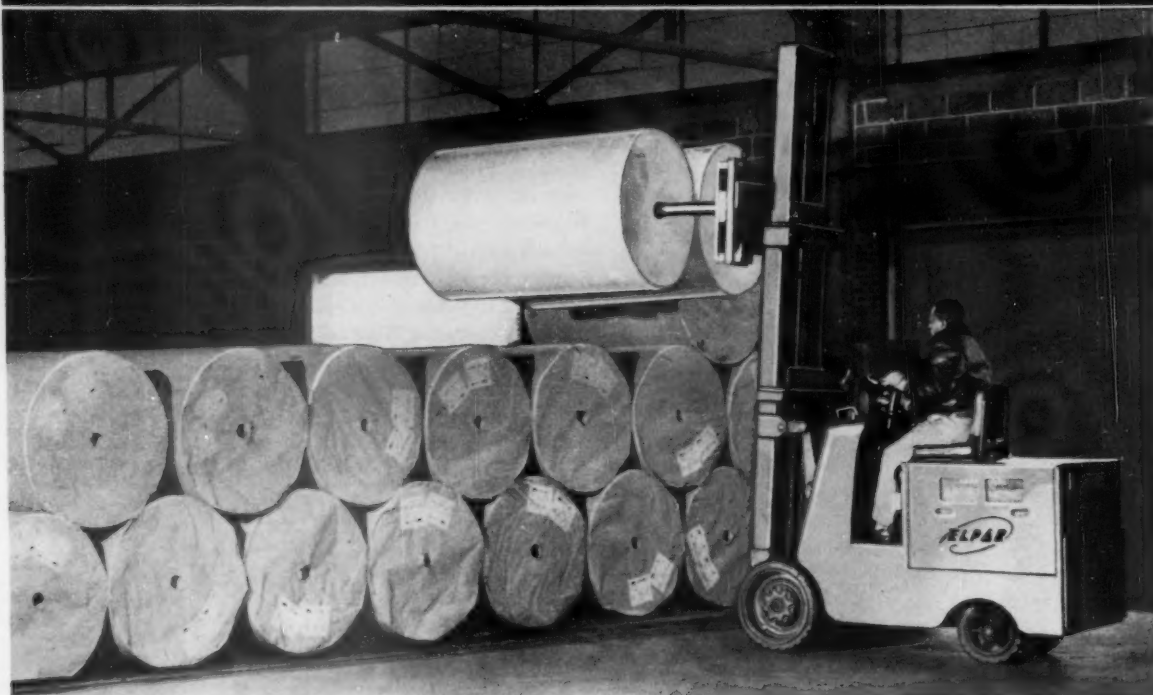


## APPLETON MACHINE COMPANY

APPLETON, WISCONSIN



# ELPAR ELECTRIC TRUCKS...



## Save \$1,200 Per Truck Per Year

Cost surveys at a number of plants reveal that ELPAR electric truck operating and maintenance costs are only *one-third* those of comparable models in other power types. Based on 2,000 hours of operation, this means an average saving of more than \$1,200 per truck per year.

In addition, ELPAR electrics give twice as many years of dependable service as gas trucks operating under similar conditions. Thus, when *all* initial and replacement costs are added up, ELPAR electric trucks actually cost *less* to buy.

And, the surveys show that average downtime for

ELPAR electrics is 2 to 3% while that for gas trucks is 10 to 15%.

More and more companies are converting their fleets to dependable, fume-free ELPAR trucks. Join the trend. Choose from our complete line of fork and ram trucks, low lift and high lift platform trucks, and mobile cranes—and save on *first cost* and *operating cost*. Get all the facts. . .

### WRITE FOR YOUR COPIES

of the ELPAR *Lift*, "Gas vs. Electric Trucks" and "LP-Gas vs. Electric Trucks." Also, send for Condensed General Catalog.



## THE ELWELL-PARKER ELECTRIC COMPANY

4548 St. Clair Avenue

Cleveland 3, Ohio

**Twice the Life . . . 1/3rd the Operating Costs**



## A last-stage $H_2O_2$ treatment improves brightness permanence!

Want to be sure your pulp retains the same brightness level on delivery as it had at the layboy? Then use Becco's Dryer Steep Bleaching Process, patented, but freely available to the industry.

Many pulp producers have found Dryer Steep Bleaching an adaptable, highly efficient method for super-bleaching chemical pulp to high brightness with minimum capital investment. Applied by means of spray pipes across the pulp sheet ahead of the dryers, hydrogen peroxide solutions increase brightness permanence, giving higher brightness both at the layboy and after many weeks' storage and/or shipment.

In integrated operations, a Becco Hydrogen Peroxide treatment can, of course, be given to the pulp in a final bleach plant stage to improve brightness and its retention. When pulp is sheeted, however, Becco's Dryer Steep Bleaching Process is preferred for achieving lasting brightness, and may often result in a reduction of the amount of other chemicals used in the bleach plant.

Becco Dryer Steep Bleaching is applicable primarily to

bleached or partly bleached chemical pulps. On all pulps Becco has a vast amount of technical knowledge compiled from years of experimentation and field work. A Becco trained technical representative will be glad to help you solve any bleaching problem you may have. Write us, requesting his help. At the same time, ask for your free copy of the following technical bulletins:

- 48. High Density Pulp Bleaching
- 64. Development Studies on Last-Stage  $H_2O_2$  Bleaching of Alkaline Pulps
- 91. Peroxide Bleaching of Chemi-Mechanical Hardwood Pulps
- 92. Peroxide Bleaching of Chemical Pulps

### BECCO CHEMICAL DIVISION

Food Machinery and Chemical Corporation  
Station B, Buffalo 7, New York

*Progress in Peroxygens*

**BECCO**



**FMC CHEMICALS INCLUDE:** BECCO Peroxygen Chemicals • WESTVACO Phosphates, Barium and Magnesium Chemicals • WESTVACO Alkalies, Chlorinated Chemicals and Carbon Disulfide • NIAGARA Insecticides, Fungicides and Industrial Sulphur • OHIO-APEX Plasticizers and Chemicals • FAIRFIELD Pesticide Compounds and Organic Chemicals





## Two new Bailey *f/b-LINE* Transmitters permit new accuracy in measuring flow and differential pressure

Pneumatically transmits rate of flow—or differential pressure—measurements to indicating, recording, and/or controlling equipment at remote stations. Transmitters consist of a diaphragm measuring mechanism and a force balance pneumatic transmitting unit.

### APPLICATION

For steam, water, air, gases and other fluids producing differentials across primary elements from 0-2 in. H<sub>2</sub>O to 0-2000 in. H<sub>2</sub>O at maximum service pressure of 50, 1500, and 5000 psig.

### FEATURES

**Transmits a Signal Directly Proportional to Rate of Flow.** Uses receiver with uniformly-graduated chart or scale. Eliminates need for external square-root extractors or characterizers.

**10 to 1 Turndown.** Differential range of each diaphragm measuring element may be changed by factor of 10 to 1; e.g., 0-20 in. H<sub>2</sub>O diaphragm may also measure 0-2 in. H<sub>2</sub>O.

**Screwdriver Adjustments.** Range and zero adjustments readily accessible. Range may be changed with screwdriver adjustment.

**Overpressure Protection.** Protects against full service pressure applied to either side of diaphragm.

**Fast Response.** No viscous dampers needed, so speed of response is very fast.

**Corrosion Resistant.** For maximum differentials between 20 and 2000\* H<sub>2</sub>O, all parts in contact with process fluid may be stainless steel. No sealing fluids or sealing diaphragm required.

**Good Stability.** Reset type boosters give good stability with high gain.

**Versatile Mounting.** May be mounted on process piping, wall, or separate mounting pipe using same bracket.

For additional information, call your local Bailey District Office, or write direct.

*Pulp and paper division*

# BAILEY METER COMPANY

1037 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

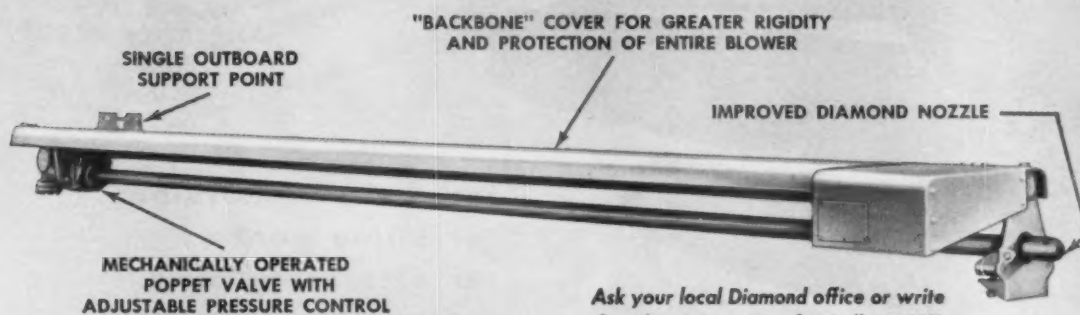


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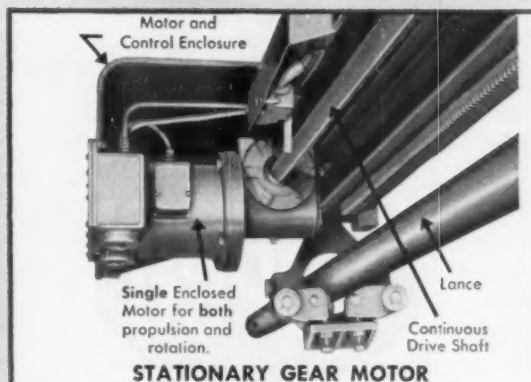
# *Reasons* for the **ENTHUSIASTIC** **ACCEPTANCE** of the **DIAMOND SERIES 300 IK** **LONG RETRACTING BLOWER**

Setting new and higher standards of efficiency, economy and dependability in the cleaning of heating surfaces that require a long retracting lance, the Diamond Series 300 IK Blower offers many outstanding features. Some of these are shown below. Others are: positive gear carriage drive . . . oversize lance (step-tapered for extra long travel) . . . designed for quick, easy servicing.

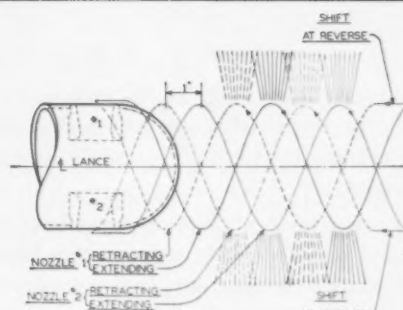
This new blower is the culmination of more than 20 years experience building and applying long travel blowers. It well illustrates the Diamond design philosophy: "Keep it simple . . . keep it basic . . . avoid unnecessary complications." It is further evidence of the fact that **YOU CLEAN BOILERS BETTER AND AT LOWER COST WITH DIAMOND BLOWERS.**



Ask your local Diamond office or write directly to Lancaster for Bulletin 2111.



Lance propulsion and rotation are by a single enclosed gear motor which drives a continuous shaft running the full length of blower and providing power to carriage. This construction makes it possible to mount motor in a fixed position at the front end for better protection and accessibility.



#### **IMPROVED CLEANING PATTERN**

Close and positively controlled helical cleaning pattern assures maximum cleaning effectiveness. Blowing pattern diagram illustrates how return travel path is exactly intermediate with forward travel path so that there is a positive nozzle sweep every inch.



**DIAMOND POWER  
SPECIALTY CORP.**

**LANCASTER, OHIO**

DIAMOND SPECIALTY LIMITED—Windsor, Ontario

A SKILLED HAND IN CHEMISTRY . . . AT WORK FOR YOU

## A NAME TO REMEMBER



- ... for pitch dispersing
- ... for slime control
- ... for size stabilizing
- ... for coating fluidizing
- ... for uniform dyeing

You will find it profitable to get all the facts about Nopcosant—Nopco's newly improved dispersant and solubilizer. Ask your Nopco representative for full details or write for complete information.

Remember, too, back of Nopco paper chemicals stands Nopco technical service—ready to assist with laboratory data and recommendations based upon your specific requirements. Nopco Chemical Company, 60 Park Place, Newark 1, N.J.

### Properties of Nopcosant

- A fine powder of uniform particle size
- Dusts less than any other similar product
- Lightest colored product of its type
- One of the most rapidly dissolving products available
- The most nearly neutral pH in its chemical class



### VITAL INGREDIENTS FOR VITAL INDUSTRIES

Plants:

Harrison, N.J. • Richmond, Calif.  
Cedartown, Ga. • London, Canada



## Buckeye expands in Florida



## to give you brighter, cleaner, stronger pulp

■ An addition to the Buckeye Plant at Foley, Florida doubles the quantity and further improves the quality of Buckeye Pulp.

The new unit has been equipped with the finest and most modern machinery to insure brighter, cleaner and stronger pulp. Additional screening and purification equipment has also been added to our first unit, built in 1954, to make Buckeye Wood Pulp even better.

This multi-million dollar plant is only part of the

Buckeye Pulp story. Take research, for example: Buckeye spends a higher percentage of sales on research than any other wood pulp producer. Take timber resources: Buckeye has four acres of timber for every ton of annual capacity, assuring a continuing supply of high grade pulpwood for increased production facilities.

In every way, Buckeye is ready to serve the expanding paper industry. Specifically, we would like to serve you. Write or phone us about your present or future needs.

# BUCKEYE PULP

BUCKEYE CELLULOSE CORPORATION • Memphis 8, Tenn.

Wood Pulp Plant at Foley • Cotton Linters Plant at Memphis

# Add this department TO YOUR RESEARCH FACILITIES

**GK COATING LABORATORY**  
ELIZABETH, NEW JERSEY

PROJECT: No. 458

DATE:

REQUEST FOR SERVICE

COMPANY REQUESTING SERVICE:

PURPOSE:

EQUIPMENT:

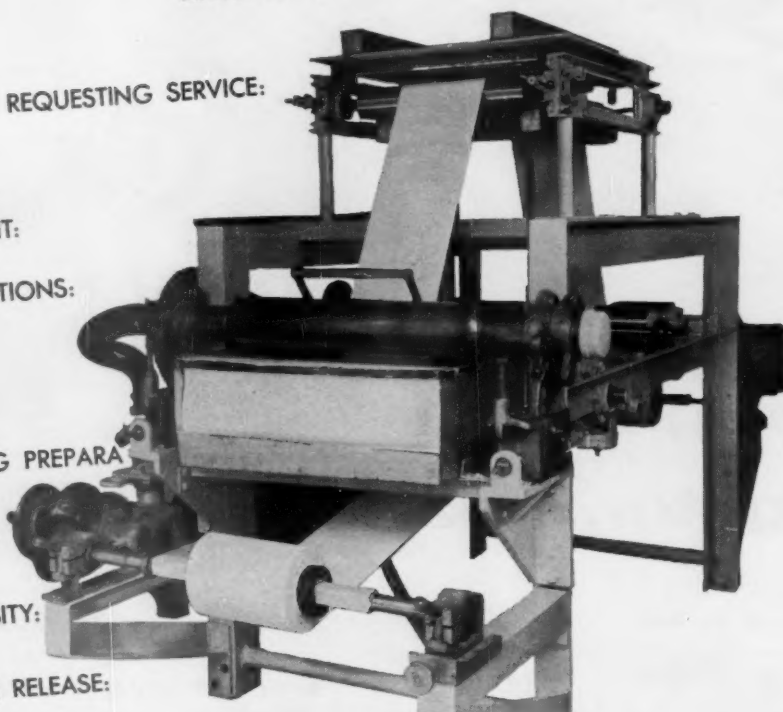
FORMULATIONS:

COATING PREPARA

SOLIDS:

VISCOSITY:

WATER RELEASE:



Georgia Kaolin Company's pilot plant coaters have aided many paper mills in determining the suitability of their raw stock for coating with various types of equipment.

Among the units in this Company's research laboratories are an air knife coater; a roll coater with reverse rolls, squeeze rolls and trailing blade; and a supercalender. Experimental trial runs on this equipment provide valuable information to paper coaters, and often save the time and cost of numerous trial runs at the mill level.

For full information regarding GK Research Service, contact the Paper Coating Laboratory, Georgia Kaolin Company, Elizabeth, N. J.

## Georgia Kaolin Clays

Coating*	Filler**
Premax	Superwhite
Premior	Standard Water-Washed
KQS	W.P.
SMC	
282	Standard Air-Floatod

\*Available in spray dried, pulverized, lump and slurry form.

\*\*Available in pulverized and lump form.

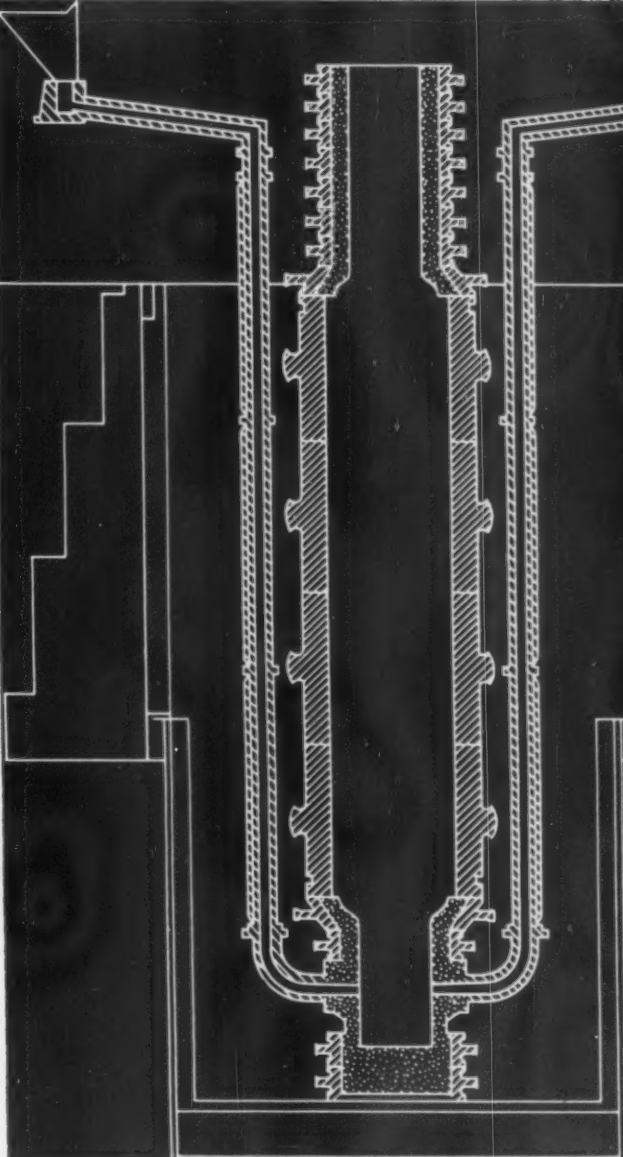
## GEORGIA KAOLIN COMPANY

Sales and administrative offices—433 N. Broad Street, Elizabeth, N. J.

# UNITED



# PAPER MILL ROLLS



**NOW...**

UNITED CAN FURNISH

- **THE LONGEST ROLLS**
- AND
- **THE HEAVIEST ROLLS**

REQUIRED BY THE  
PAPER INDUSTRY

In United's Canton, Ohio Plant is a recently completed deep roll casting pit that permits the pouring of chilled iron rolls exceeding in length and weight any previously used in paper manufacture.

This newest United facility, plus the most modern roll grinding and finishing equipment, is now available to meet the industry's maximum roll requirements. Quick delivery and strict adherence to rigid specifications are assured by United's complete facilities and more than 50 years' experience in roll design and manufacture.

When you are in need of rolls—for whatever requirement—phone or write us, without obligation, of course.

## UNITED ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at PITTSBURGH • VANDERGRIFT • YOUNGSTOWN • CANTON • WILMINGTON

Subsidiaries: ADAMSON UNITED COMPANY, AKRON, OHIO

STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.





# <sup>®</sup> **Texalon**



**laps easily in minutes . . . operates smoothly at speeds up to 10,000 FPM**

If your flat-belt drive requirements call for high speeds with high-pulley ratios . . . great tensile strength and elasticity . . . high co-efficient of friction — you owe it to yourself to investigate Rhoads' Texalon, the new all-synthetic belting for modern drives.

Texalon is a combination of woven textile and flat ribbons of extruded nylon, welded together into a strong, flexible belting. No belt shortening, no tension adjustments. Easily made endless in your plant or purchased made to specification.

At Rhoads, an experienced belt-drive engineer recommends the flat belt that is exactly right for your operating conditions. It may be Tannate leather belting, the product of 256 years of tanning experience. It may be Tanastic, new leather/plastic belting with a stretch-free nylon core. Or it may be Texalon — for facts on Texalon write for new 6-page data folder and sample. Address Engineering Department, J. E. Rhoads & Sons, Wilmington 99, Delaware.



In nearly every application, when all factors are considered, the most economical means of Power Transmission is the Belt Drive.

# **RHOADS**

**Since 1702 . . . Pioneers in Mechanical Power Transmission**

**YARWAY IMPULSE\*** is the only steam trap that continually samples fluid in the line to maintain condensate discharge close to steam temperature, eliminating condensate as soon as it forms.

Condensate seals the small control orifice against steam leakage under all normal operating conditions.

Here's why your best steam trap buy is Yarway Impulse —

1. GETS EQUIPMENT HOT FAST—AND KEEPS IT HOT
2. ONLY ONE MOVING PART
3. LOW MAINTENANCE
4. SMALL SIZE—LIGHT WEIGHT
5. GOOD FOR ALL PRESSURES
6. NON-FREEZING
7. COMPLETE LINE FOR EVERY REQUIREMENT



ONLY ONE MOVING PART. A SMALL STAINLESS STEEL VALVE, ACTUALLY "FLOATS" ON THE CONDENSATE LOAD.

Actual size  
¾" trap

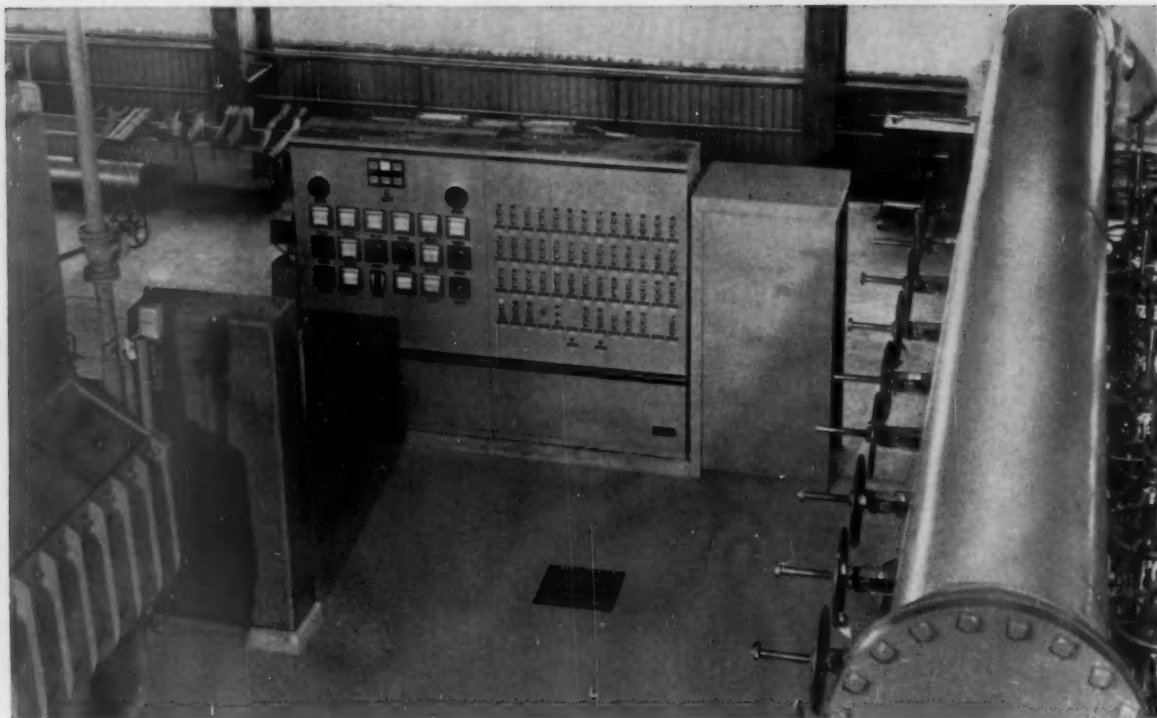
\* A COMPLETE LINE OF STEAM TRAPS. ALL OPERATING ON A PROVEN THERMODYNAMIC PRINCIPLE.

**YARWAY**

*impulse*<sup>®</sup>

Manufactured by YARNALL-WARING CO., 103 Mermaid Ave., Philadelphia, Pa.  
Stocked and sold by 270 Industrial Distributors  
Write for free bulletin "The Why and How of Steam Trapping"

## PHOTO REPORT:

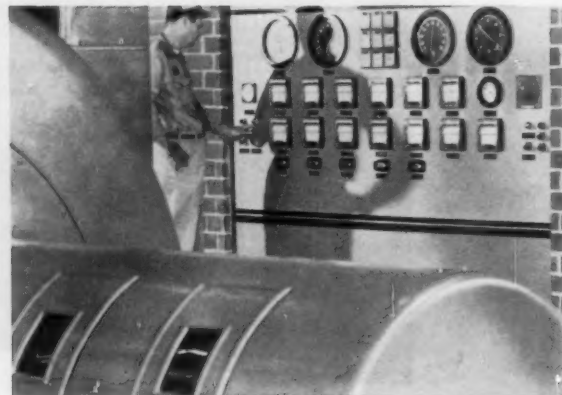


**PULP MACHINE — WET END** Control panel for wet end of pulp machine seen from upper mezzanine. At right are push buttons used for remote operation of all electrical equipment. On pipe standard at left, Foxboro d/p Cell Transmitter\*\* senses level in machine head box.

## NEW CONTINUOUS PULP MILL OF GULF STATES PAPER CORP.

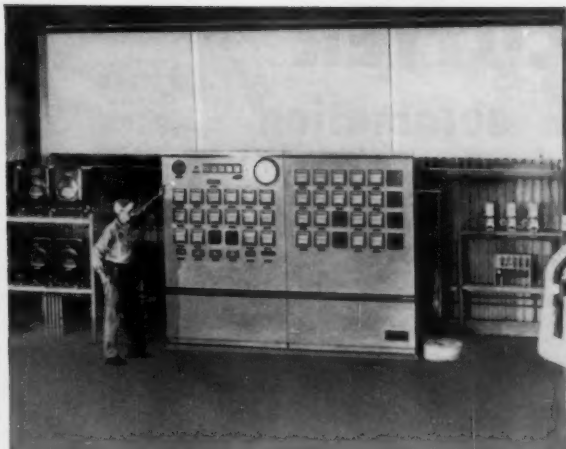


**BROWN STOCK WASHERS** Foxboro Consotrol Control Panel for three-stage Brown Stock Washers includes foam tank level and Save-all controls. Conductivity measurement of weak filtrate is basis for automatic regulation of shower flow to third stage washer.

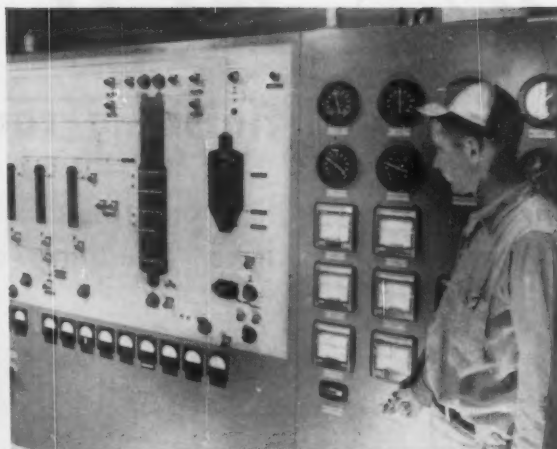


**TURBINE ROOM** Foxboro Control Center for steam pressure reducing stations in background, with generator in foreground. Steam flows, pressures, and temperatures are recorded and controlled — steam flows totalized.





**BLEACH PLANT** Main control cabinet for five-stage bleach plant is typical example of how complete instrumentation with space-saving Foxboro Consotrol receivers results in convenient size panel. Operating consoles (not shown) are provided at the washers for control of speed, stock rates, and dilution flow.



**KAMYR DIGESTER** Continuous digester control panel features graphic representation of 300 T/D Kamyr digester system, blow tank included. Integral with the graphic section are push button and switch controls which provide complete remote operation for all pumps, feeders, and valves.

**COMPLETELY INSTRUMENTED** by Foxboro from variable to valve—that's the automation story at Gulf States Paper Corporation's new \$25 million bleached pulp mill at Demopolis, Alabama.

More than 25 types of Foxboro instruments are used to measure, transmit, record and control over a dozen different variables. Variables that include: temperature, temperature difference, pressure, pressure difference, liquid level, conductivity, flow, motor load, speed, density, oxidation-reduction potential, pH, dew point, and moisture.

When designing their new mill, Gulf States standardized on Foxboro pneumatic Consotrol\* instruments. Major reasons: 1) Foxboro's demonstrated ability and experience in the pulp and paper industry; 2) compact Foxboro panels reduced the size of their control centers and hence, helped keep building costs down.

Gulf States' plant represents one of the most completely automatic pulp mills in the industry today. Automation based on Foxboro's application-engineering know-how. If you're planning an expansion or modernization program, you can put this experience to work for you. Call your local Foxboro Field Engineer, or write The Foxboro Company, 9911 Neponset Ave., Foxboro, Mass.

\*Reg. U. S. Pat. Off.

\*\*Trade Mark



**BLACK LIQUOR EVAPORATORS** Foxboro Control Panel for black liquor evaporators also includes recording and control stations for the causticizing area. Foxboro Dynalog\* electronic indicators transmit pneumatic signals of flow, temperature and conductivity to the appropriate recorders and controllers.

# **FOXBORO** INSTRUMENTATION

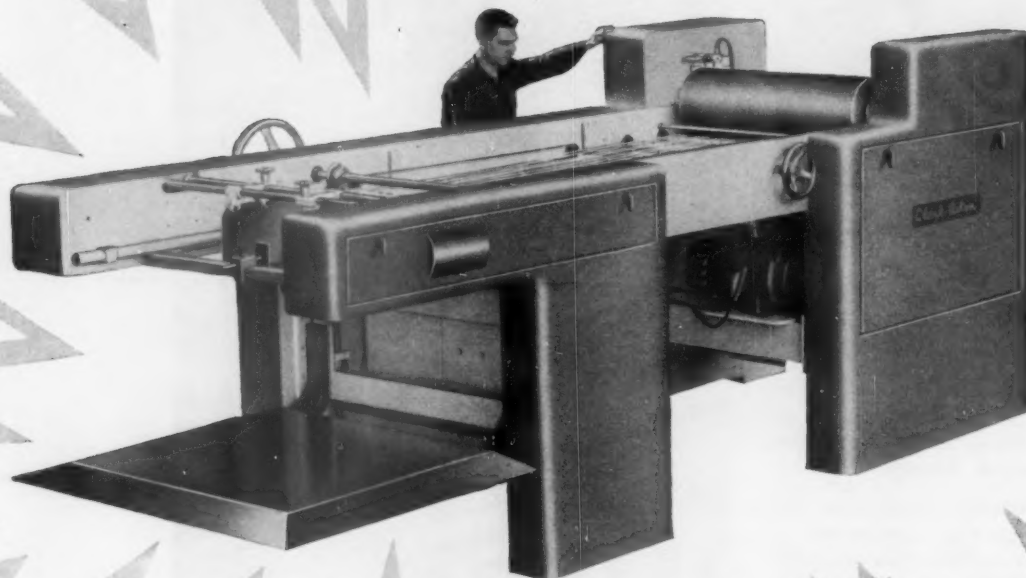
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*for the Pulp and Paper Industry*

# Clark-Aiken's **NEW** TYPE "G" CUTTER

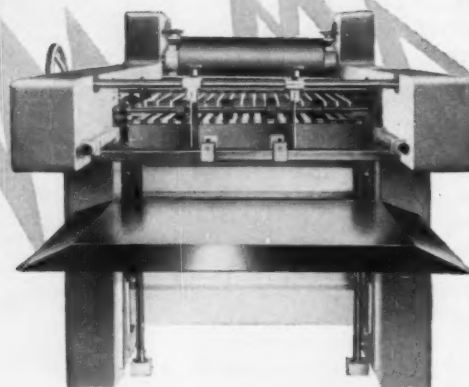
for fast economical finishing room automation

Amazing versatility in registration or general purpose sheeting that means greater efficiency at lower operating costs.



If you want precision sheeting at high speeds let Clark-Aiken engineers show you how you can achieve this goal, and still cut production costs, with the new Type "G" Cutter. And here is convincing proof of why the "G" Cutter combines top quality finishing room automation with economy:

- Complete sheet control with new type patented corrugated slice
- New shear type Clark-Aiken Slitters
- Speeds in excess of 1000 feet per minute (depending on paper type)
- Widths up to 46 inches
- Accuracy within  $\pm .015$  inch (depending on paper type and printed mark)
- Streamlined shrouding
- New high speed dynamically balanced cast semi-steel knife cylinder
- New screw type elevating system and overhanging piler
- High speed tape system with overlapping delivery
- Accurate piling with reciprocating jogger and new side and back joggers
- Fabricated heavy steel side frames for cutter, layboy and piler
- Air controlled pinch roll
- Patented minimum back lash double differential



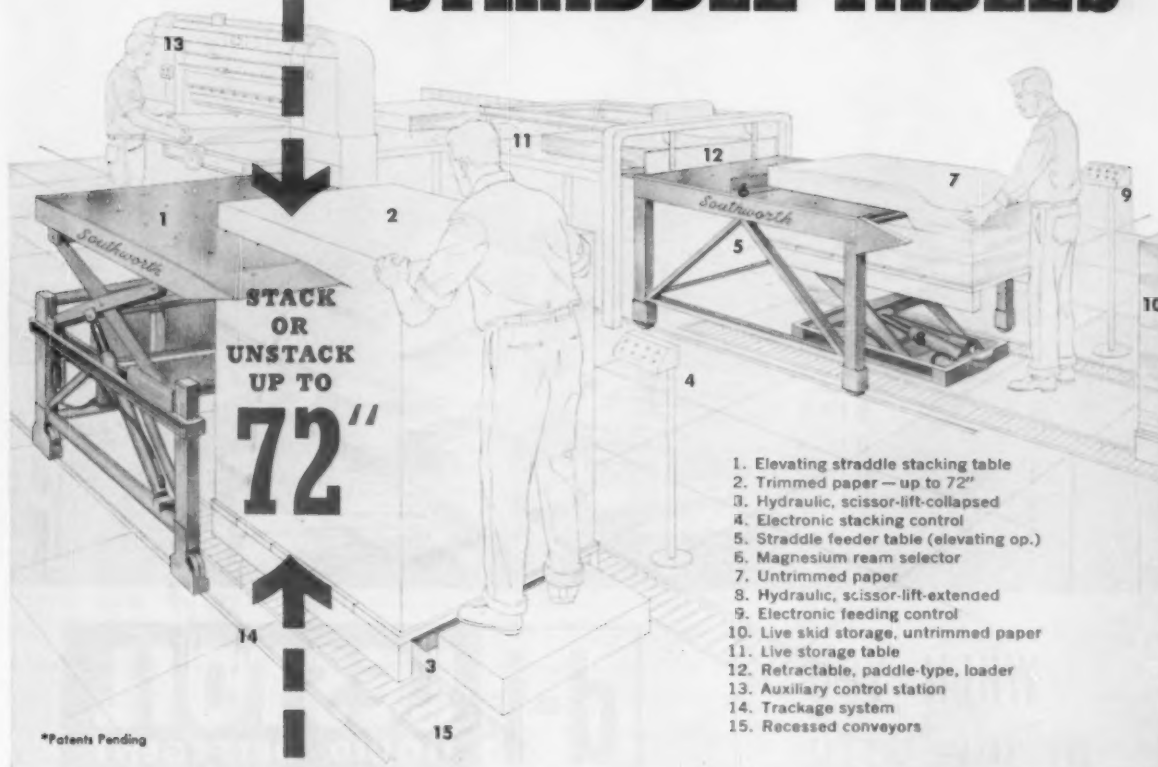
Consult Clark-Aiken engineers for the complete Type "G" story. Write for the new two color brochure today.

THE  
*Clark-Aiken*  
COMPANY

957 HART AVENUE

LEE, MASSACHUSETTS

# SOUTHWORTH'S NEW *self-elevating* STRADDLE TABLES\*



\*Patents Pending

1. Elevating straddle stacking table
2. Trimmed paper — up to 72"
3. Hydraulic, scissor-lift-collapsed
4. Electronic stacking control
5. Straddle feeder table (elevating op.)
6. Magnesium ream selector
7. Untrimmed paper
8. Hydraulic, scissor-lift-extended
9. Electronic feeding control
10. Live skid storage, untrimmed paper
11. Live storage table
12. Retractable, paddle-type, loader
13. Auxiliary control station
14. Trackage system
15. Recessed conveyors

minimum capital investment, per pair, pays off in maximum trimmer production engineered to prevent idle time, eliminate manual lifting, conserve floor space 1000 lb. capacity, sheet size 52 x 76 — air film buoyance protects sensitive stock.

What is the present speed at which you can de-skid, feed your mill trimmer, trim, unload and stack as high as 72 inches? For it is that speed which determines to a great extent the efficiency, and in turn the cost, of your finishing room operations.

Would you like to double that speed? Southworth Straddle Tables have done even better in other mills . . . primarily by reducing manual handling to a minimum and by permitting *full time operation of the trimmer, itself.*

Could the typical three-man layout, illustrated above, be adapted to your mill on a self-liquidating basis? We believe it can. The equipment cost is surprisingly reasonable . . . the installation cost equally low, as no excavating is necessary.

For Details Write or Call Collect:

## SOUTHWORTH MACHINE CO.

2011 WARREN AVENUE, PORTLAND, MAINE, SPRUCE 4-1424

Mfrs. of Paper Conditioners; Automatic Skid Lifts; Lift Tables; Skid Turners; Hand, Foot, Motor Driven Punching Machines; Humidifiers; Envelope Presses; Punch Heads; Tabling Knives and Corner Cutters plus Custom Built Equipment.





**WASTE TODAY ...  
PROFIT TOMORROW!**



**WHEN YOU  
DE-INK WITH ...**

**d-i LESTOIL**  
LIQUID DETERGENT

**D-I LESTOIL**

1. Dissolves and disperses ink, wax, oils, asphalt, fillers and other contaminants.
2. Promotes rapid and complete defiberizing — makes fibres free-flowing.
3. Keeps entire system clean — helps prevent slime deposits.
4. Prevents soil deposits and build-ups on wires, Yankee Dryers, etc.
5. Is ideal for washing felts — on or off the machine.



Want to get good, clean, low-cost furnish from mixed waste-papers or other low-grade materials? — Or from rope, rags, cotton linters or cotton mill sweeps? Want a cleaner, clearer sheet with a look of quality that spells profit?

d-i LESTOIL can help you do it — without expensive formulas, without changes in your present equipment and at a saving in time, labor and power.

d-i LESTOIL combines thorough wetting, penetrating, emulsifying and dispersing actions. Added to stock in the boiler or pulper, it quickly and thoroughly removes ink, grease, wax, asphalt, adhesives and other contaminants, and prevents their redeposit in the stock.

What's more, d-i LESTOIL promotes rapid and complete defiberizing of paper stock, and helps keep your felts, wires and your entire system whistle-clean.

Why not find out — at our expense — what d-i LESTOIL can do for you? For a generous free sample and descriptive literature, write today to

**ADELL** *Chemical Company*

HOLYOKE, MASSACHUSETTS



**Profitable crops like this**



**grow from site preparation like this!**

Growing a profitable crop at the lowest possible cost is a matter of carefully planned forest site preparation. It calls for the choice of methods best suited to the operation. It also calls for the selection of equipment best suited for each particular job. To aid in the selection, Caterpillar has kept close tabs both on the use of different methods and equipment to evaluate their effectiveness. Some of the methods and machines used are shown here. Cost results on methods and machines have been compiled on the following subjects: Stump Treatment; Stump Clearing and Tree Cutting; Chaining; Raking and Windrowing; Harrowing; Planting. For information, write Logging Section, Caterpillar Tractor Co., or call your nearby Caterpillar Dealer. You'll find him listed in the Yellow Pages.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.



**SHEARING AND STUMPING:** Standing live oaks in a cleared area went down fast before this Cat D8 Tractor equipped with Rome K-G blade. Trees, 18" to 81" in diameter, were hit by the stinger at height of 3' to 4' above ground level, sliced and pushed over. Stump tops were sheared at ground level in one or several passes.



**RAKING AND WINDROWING:** Working in hammock lands with live oaks up to 72" in diameter, this D9 utilized a multi-application rake as a felling, raking and windrowing tool. Merchantable timber had been harvested, but no clearing completed. A D8, D7 and No. 977 Traxcavator with rakes handled the less dense areas.



**HARROWING:** After an area of hardwood, mixed pine and heavy brush had been chained, raked and stumps cut at ground level, this Cat D8 Tractor with heavy-duty harrow proved a most effective tool. The number of passes, one or two, on an operation like this, is up to the individual forest owner.

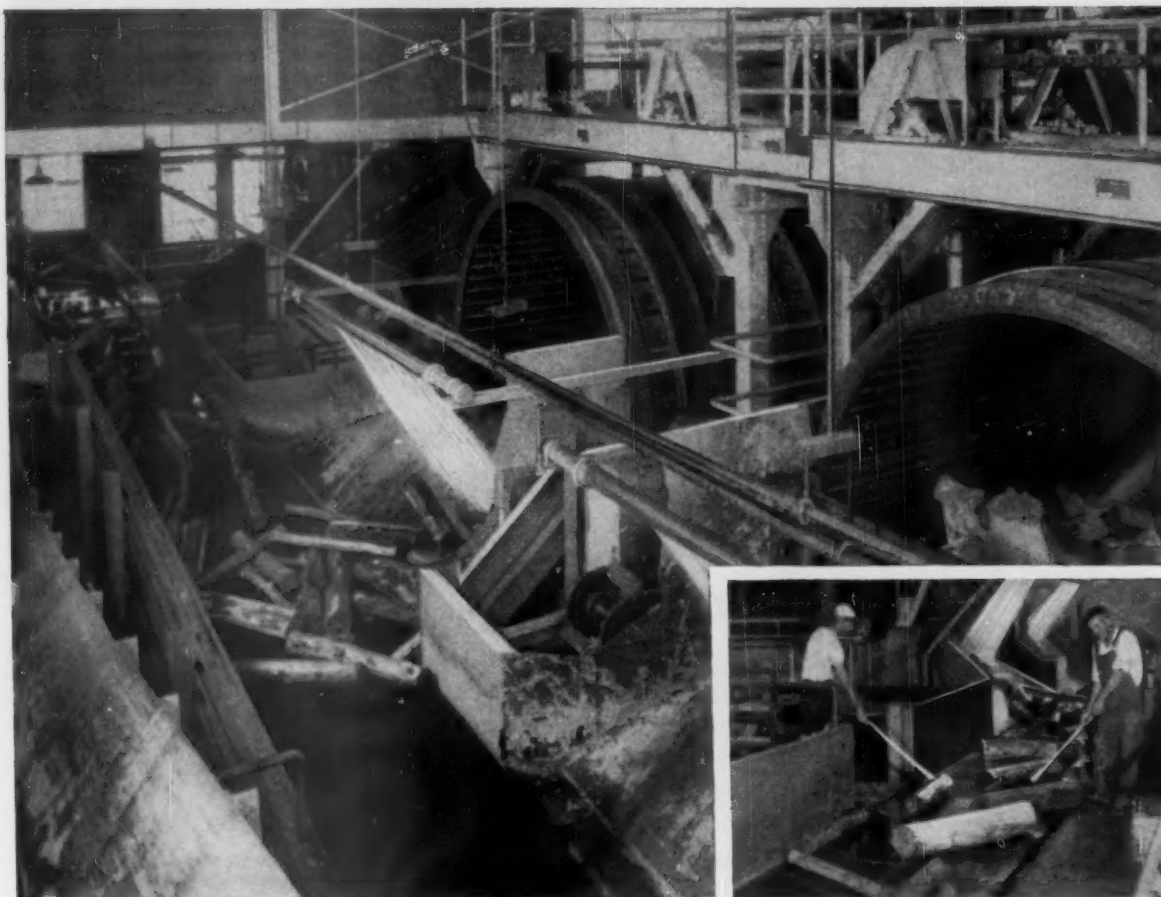


**PLANTING:** These two Caterpillar D4 Tractors equipped with V-plows and wild-land planters planted 20,000,000 seedlings on a 24,000-acre plantation. The sure-footed traction and dependable performance of these rugged Diesel Tractors contributed substantially to low-cost production on this operation.



Conveyor Belts

## Logging a new record!



This U. S. Giant® 60" wide Log Sorting Belt is built to withstand the heavy impact of logs tumbling onto it from the debarking drums (left) and to resist the sharp points of the pickaroons which the men use to sort out rejects (right).

When the Mosinee Paper Mill Company, Mosinee, Wisconsin, required a conveyor system to step up production of wood and pulp, they turned to the company that had helped with the same problem on many installations in the United States and Canada—U. S. Rubber.

"U.S." engineers studied the requirements, the mill layout, and—above all, the problem of costs. Eight "U.S." conveyor belts were installed, made endless on the job. Production went up to a new record for the log-sorting operation of Mosinee Mills.

The easiest and most economical way to increase haulage and to lower costs is to enlist the services of United States Rubber conveyor belt engineers. Their wide and varied experience in materials handling for the wood products industry allows them to give you the very best help obtainable.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and the finest quality industrial rubber products.



Mechanical Goods Division

# United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Company, Ltd.





## Get efficient loading on any footing ...in any weather...with a one-man "crew"



You "semi-skid" with no strain on the tractor, let big, heavy-duty skid-shoes be the "buffers." Impact forces of rough-ground travel are gentled 67% or more by patented, shock-swallowing Hydro-Spring!

With selective precision dumping control you release logs one at a time or all at once. Top grab-arm is controlled by a third valve of the hydraulic system. This valve is standard equipment and can also be used to control rear-mounted road-working equipment.



In snow three feet deep with pulpwood piles frozen tight...or in rain-soaked woods with stocks mudded-in...in any weather...on any footing...the sure-going International Drott Skid-Grapple can give you top pulpwood loading efficiency. You need only a one-man "crew" to make big cash savings. Many owners report saving more than \$1.00 per cord on production costs with a TD-9 Skid-Grapple.

You just push the Skid-Grapple's lower prongs under the frozen or mudded-in wood piles. Then, clamp onto the load securely with the exclusive top grab-arm. Now, apply patented triple-power pry-over-shoe break-out action together with ground level roll-back.

Using lift-frame mounted skid-shoes, you "semi-skid" the big grapple loads over any soil or terrain condition quickly, easily, and at low cost to truck or pile. Here again, positive, grab-arm load control speeds unloading, lets you release all the wood at once or a "stick at a time."

See how exclusive TD-9 Skid-Grapple advantages let you load up to 240 cords daily! There's an International Drott Skid-Grapple size to fit your pulpwood loading operation. See your International Drott Distributor for a demonstration of the size you need.

International Harvester Company, Chicago 1, Illinois  
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

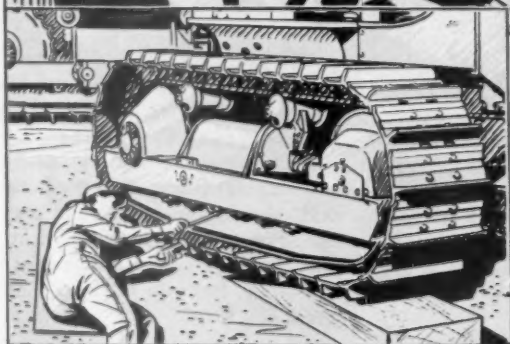


**INTERNATIONAL®**  
**DROTT®**

# Your Allis-Chalmers dealer

...backed by  
modern facilities  
and an experienced,  
well-trained staff

Your Allis-Chalmers dealer *knows* the equipment he sells. He can give you the expert service in shop and field that results in "like-new" performance from every Allis-Chalmers unit in your fleet... keeps them producing on your jobs.

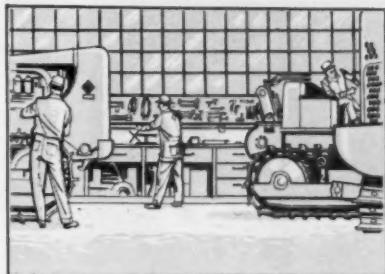


Detailed information on maintenance, adjustments and other facts on care of the machinery is delivered with the equipment. Operating tips are passed along to your men—to help them get started right and get the most from their equipment.

Careful pre-delivery servicing assures that Allis-Chalmers construction machines have been thoroughly checked...and that they're ready for work as soon as you get them.



# is a specialist in service

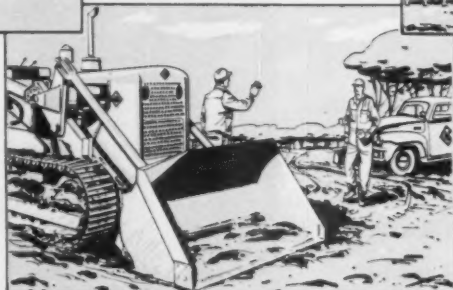


**Shop service** at your Allis-Chalmers dealer is fast and efficient—because it's handled by factory-trained men, using factory-approved tools, equipment and methods. Specialized mechanics and special facilities all help to speed service.



**Prompt field service**—a call —any time, day or night— brings a qualified serviceman and a fully equipped "mobile workshop." Result —problems can be quickly and accurately solved . . . equipment put back on the job with minimum delay.

**Scheduling checkups** with your Allis-Chalmers dealer will insure that proper maintenance procedures are followed . . . stop trouble before it starts . . . keep your machines producing.



## ...backed by a ready stock of original specification parts

### ENGINEERED RIGHT

Allis-Chalmers parts are designed as original equipment . . . benefit from intensive metallurgical research. And each comes from the drawing boards of experienced construction machinery engineers.

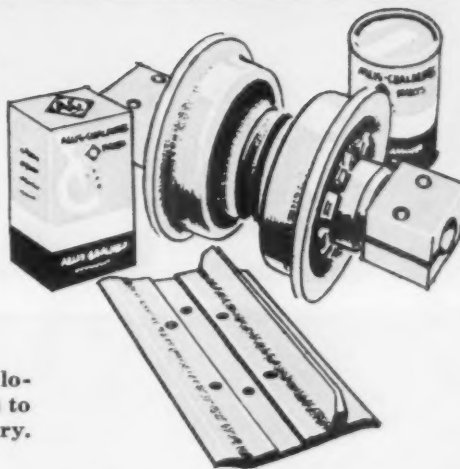
### MANUFACTURED RIGHT

Precision-made parts assure long-life service. They're made by skilled craftsmen on modern industrial machinery and are subjected to original-equipment inspection and testing.

### TO PERFORM RIGHT

Each part is made of top-quality material, heat-treated to correct hardness and made to exact specifications. You can depend on them for full-capacity production on the toughest jobs you have.

The men of your Allis-Chalmers dealer organization know local conditions. Look to them for equipment recommendations to fit your job requirements . . . for true value in used machinery.



ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

# Look ahead...*move ahead*...and stay ahead

# with **ALLIS-CHALMERS**





ARKANSAS LOGGER:

# "MY FORDS LOAD 5 TRUCKS A DAY..."

handle anything we can hook onto!"

Carl Barnes of Fordyce, Ark., uses two Ford Tractors to snake logs out of the woods, and a third for stacking and general work at the landing. "They're easy to operate," he says, "and they've got the right kind of power for this work—handle anything we can hook onto, up to six logs per load."



## "BUILT TO TAKE THE ROUGH STUFF"

"We've got a total of over 3,000 work hours on the three Fords," Mr. Barnes reports, "and the way they're holding up is really fine. We even use them to push and pull the loaded truck through new roads and soft going . . . use one Ford equipped with blade to maintain roads through the woods."



## "DEALER SERVICE? EXCELLENT!"

"He's really on the job," says Mr. Barnes, "makes the 70-mile round trip any time I need him." Ford users everywhere report the same fine service. Your dealer right now is showing a great line of new Ford gasoline, diesel and LP-Gas tractors. Stop in and see them, or write to Industrial Sales Department, Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan.



HANDLE ALL THESE JOBS AND MANY MORE . . . AT LESS COST!

YOU SEE MORE  
**FORDS**  
BECAUSE THEY SAVE  
MORE MONEY!



**You can be in this money making picture with the new HOMELITE**

**7 21**

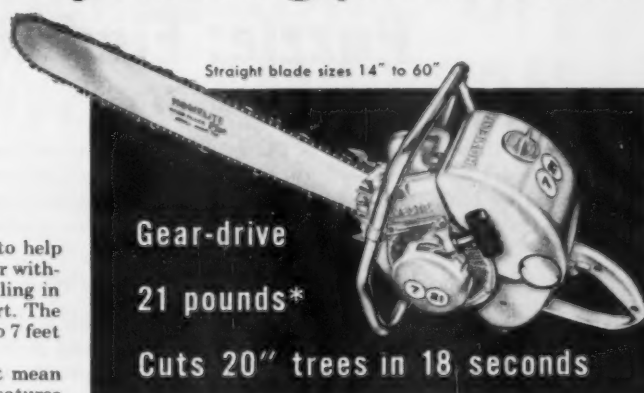
That's right! The new Homelite 7-21 chain saw is designed to help you make more money, faster. Its big fuel tank lets you cut longer without refueling. Its balanced 21 pounds\* means easier, safer handling in any location, any cutting position . . . lets you cut with less effort. The rugged gear drive delivers enough lugging power to fell trees up to 7 feet in diameter; speed to cut through 20" trees in 18 seconds.

A real professional's saw, the 7-21 has 7 magic features that mean greater dependability, longer life, less maintenance. These features include the famous Homelite high compression, short-stroke engine that delivers full power in any cutting position . . . automatic governor to maintain proper chain speed . . . large air filter to keep out sawdust, dirt and snow . . . simple piston pump oiling . . . tough, drop forged counterbalanced crankshaft to assure smooth running with less operator fatigue.

A full line of attachments is available. The plunge-cut bow — 14" and 18" — is ideal for cutting pulpwood . . . the brush cutter converts your 7-21 to a power scythe in minutes . . . the clearing bar makes the 7-21 a handy, fast-cutting clearing tool.

Get in the money making picture! Find out for yourself by seeing a free demonstration of the Homelite 7-21 chain saw at your nearby Homelite dealer's.

\*less bar and chain



And the Homelite 7-21 is guaranteed for a full 7 months!

**HOMELITE**  
A DIVISION OF TEXTRON INC.

7711 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

Manufacturers of carryable pumps, generators, chain saws, blowers.



# OLIVER



## Puzzle: Find the Oliver OC-4!

See it there in the thick of things! Just goes to show you how this compact tractor so perfectly fits pulpwood operations! Amply powered for big pulls, it's ideally sized for pioneering new trails as well as traveling faster through heavy growth areas or out in the open.

### Lowest Cost Diesel on the Market

Now you can have the popular Oliver OC-4 with a choice of 29.5 h.p. gasoline or diesel engine—the first time diesel power has ever been offered in a tractor this size! What's more, the OC-4 is the lowest priced crawler in its class—meaning you can afford to bring its advantages to your operation right now for long-run greater profits.

See your Oliver Distributor, or write for literature



**THE OLIVER CORPORATION**

Industrial Division

19300 Euclid Avenue, Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment



The OC-4 has fully protected crawler design with four lower track rollers for maximum ground contact, greatest traction. Four-speed transmission gives selective speed range from low 1½ m.p.h. to lively 5½ m.p.h. New optional "Slo-Low" auxiliary transmission gives you a 50% speed reduction, forward or reverse, in any of the four gear ranges. Mounts winch, dozer, loader—whatever attachments you want.





**UP COMES A FULL LOAD** of pulpwood. Powerful American Cranes with fast, responsive controls give operators pinpoint accuracy and consistently higher

production rates. American's precision design and rugged construction keep them out of the shop, working on the job month after month!

## PULPWOOD HANDLING RATE UP, COSTS DOWN...WITH AMERICAN

Pulpwood handling volume goes up—stays up—when American Cranes are given the job. Working this American 300 Series Crawler, the operator spots the grapple accurately, picks it up and swings it fast to pile logs quickly—keep pulpwood moving!

Americans do more work because, from every angle, they're designed for volume production. Fast, smooth swings—required on jobs like this—result from American's swing clutch design that maintains positive action hour after hour. For pulpwood handling, double tagline winches are available to position the grapple for fast pickups, accurate spotting! Highly maneuverable truck and self-propelled cranes—surefooted crawler cranes move around the woodyard easily.

The best operator is even more efficient with American's precision control system. Anti-friction bearings in the brake linkage actually cut "leg work" in half. This means up to 50% less push on the pedals—faster release with better control when lowering the load!

Pulpwood handlers have found that American Cranes maintain peak production levels longer and at substantially lower operating costs. *Their records prove it!* You'll find that versatile, dependable Americans return maximum production with minimum downtime and cost. Distributors have complete technical facts on the big American line with capacities that start at 12½ tons on rubber, ½-yard on crawlers.

EXCAVATORS - CRANES  
to 2 yds. - 50 tons

LOCOMOTIVE CRANES  
to 130 tons

DERRICKS - HOISTS  
to 800 tons

REVOLVER CRANES  
to 400 tons

### AMERICAN HOIST

and Derrick Company

St. Paul 7, Minnesota

AMERICAN HOIST  
PACIFIC COMPANY  
Special materials  
handling equipment

CROSBY-LAUGHLIN  
DIVISION  
Drop forged fittings  
for wire rope-chain



A FEW MILES FROM YELLOWSTONE PARK, logs are trucked out of the woods (left) and loaded on railroad cars (right), for 1,800 mile trek to Kaukauna, Wis.

## Logging on Continent 'Roof'

means dodging bears and plowing snow. But women work along with men in Yellowstone region, serving Thilmany mill

—West Yellowstone, Mont.  
● Astride North America's Continental Divide and within 20 miles of Yellowstone's spouting geysers, pulpwood logging operations sponsored by Thilmany Pulp & Paper Co. may set important patterns for the future.

If the next big push for woodpulp in the United States will be in the Rockies, as many believe, Thilmany has sound reasons for keeping Charles Ericson and his partner-son, Gordon, in business in the fringes of 88-year-old Yellowstone, most famous of all national parks. They are logging at from 6,000 to 6,700 ft. altitude, shipping high quality lodgepole pine by rail, 1,800 miles to the Kaukauna, Wis., mill. Virtually all the timber in the vast Rockies ranges is government owned, and permits are granted for its cutting.

Under present conditions, this is expensive wood. It actually hasn't been necessary for Lake States mills to go so far for raw material this year,

in view of the current supply vs. demand situation in the industry, and other similar operations in Montana have shut down. But in this area, Thilmany stuck with its contractor, the Ericsons, for the eighth year, partly because of the pulping quality of the wood and partly to add to its knowledge and experience in Rocky Mountain logging, which is certain to prove more useful as time goes on.

### 20,000 Cords in 1958

Some 20,000 cords were being shipped this year on Union Pacific gondola cars from two loading points, here at West Yellowstone and at Trude Siding just on the other side of the Continental Divide, in Idaho.

Eight to ten railroad cars, each holding about 25 cords, can be loaded per 8 hr. day by one man operating a crane and another straightening sticks in the car and placing stakes on the edges. A third man straps chicken wire to the load above the rim of the

car to keep load in place and prevent sticks falling off. This safety measure is required by law.

Mr. Erickson is a safety-minded operator. All fallers carry small portable fire extinguishers and during hazardous periods, a Caterpillar D7 is on standby for fire suppression.

### Equipment Being Used

The Ericson operations are using eight trucks, some being 2-ton No. 600 Fords and the others Chevrolets. It has three big skid-loaders. One is an Allis-Chalmers and two are Caterpillars. Also an Allis-Chalmers HD5 and Caterpillar D7 are used for road-building. A new Adams road grader is used.

A new Ford T-750 "Big Job" truck has been purchased with a Low-Boy Martin trailer and these are used to carry equipment from place to place. Smaller than conventional tires are used on this truck to get more power through passes.

Another new acquisition is a Drott

skid-loader which is expected to be useful in speeding up loading operations.

#### Plenty of Bears

As a PULP & PAPER editor was snapping pictures of the Ericson camp and machine depot here, a brown bear was roaming in the camp 50 ft. away. Browsing in the Callatin River, a few miles distant, two big moose posed for pictures (Funny how moose seldom become alarmed at movement across water or persons approaching in boats). That same bear, later that evening, bared his fangs and started for a logger who was on the porch of his house and ducked inside.

This is a "family camp," with wives and children, and the Ericsons are not happy about the bears. West Yellowstone is famed for having plenty of dangerous grizzlies around (they can be seen any night at the town dump), even though in the nearby Park a grizzly is rarely seen any more. You would be surprised how many of the million or so tourists who pass through the Park each year have been killed or mangled by brown or black bears, for stupidly approaching them too close for pictures, but very seldom is any publicity given these tragic events. (There are new signs in the park, prohibiting feeding bears, but it is flagrantly violated.)

#### At Park Entrance

West Yellowstone is one of the Park's five entrances, the only one on the west side, where about a half mile strip of Montana and Idaho is included in the 3,472 sq. mi. national playground (except for this and a similar thin Montana strip on the top, it is entirely in Wyoming). It is a community of about 800 "permanent" residents, half of whom leave in the winter, but it has 7,000 beds in hotels and motels to accommodate the continuous caravans of tourists. The Ericson boarding camp and headquarters is just on the outskirts of town.

One logging operation is four miles from town, at 6,000 ft. elevation. The other is some 30 miles distant, near Island Park, Idaho, at 6,700 ft. To reach the Idaho show, you cross the Continental Divide, which at this point is the boundary line between Idaho and Montana and just below here swings into the Park.

#### Women Work in Woods

At the Idaho operation, it wasn't necessary to provide a boarding camp, as virtually all the crew have wives and/or children and live in their own trailers or cabins. Ten of the wives work in the woods, too. They move brush aside and carry measuring sticks

Continued on next page

## Yellowstone Mountain Logger Invents Hydraulically Operated Pulpwood Loader

Unique piece of equipment used in the West Yellowstone, Mont.-Island Park, Ida., operations is this pulpwood loader invented by Charles Ericson, head of the operations. He has patents pending.

Mr. Ericson has three of these machines, two on Ford trucks and one on a Caterpillar tractor. The latter can go into snow and bring pulpwood in its grapple to a truck, or else load on a dray which is later hauled to a truck. There is still two or three feet of snow on the ground when logging starts in May.

This Ericson pulpwood loader is mounted behind the driver's seat on truck or crawler and it consists of a head frame with five hydraulic levers, which manipulate a jointed crane and a grapple which lifts one-fourth of a cord of 100-in. logs. It can also manipulate a sand-bucket in place of the

grapple.

Its great flexibility is a key feature, as it turns the grapple in any direction, picks up wood from side or back of truck or tractor, and easily loads or unloads at front or back of truck. The operating frame can be lifted 3 ft. to make high loads. Two levers are for master cylinders for lifting. One opens and closes the grapple. Another lever will turn the grapple. The fifth lever will lift the entire head frame and controls up 3 ft. The truck driver stands at his post to operate at this position. Otherwise he operates the loader while sitting backwards at his seat.

The loader is powered with a take-off from truck or tractor motor and the loader operates at idling motor speed.

The Ericson machine will unload the same truck it has loaded in the railroad yard.



SHOWS FLEXIBILITY OF ERICSON-INVENTED LOADER (only one stick was available at time PULP & PAPER took these demonstration pictures, but last picture shows a quarter-cord load): (Left) Brings wood far forward on Ford truck. (Right) Lifts operating frame for high loading. (Left) Turns grapple sideways to pick up stick at side of truck. (Right) Finally, it can pick up a full load!





**6 FEET OF SNOW** are plowed aside in Spring by D7 Caterpillar for logging road.



**WOOD IS PILED** on truck by Drott 50K3 skid-loader.



**LOGS ARE STACKED** for truck loading here, with Caterpillar tractor at work.



**TRUCK IS UNLOADED** at r.r. siding by Unit crane loader with clamshell bucket.

to mark off 100 in. log lengths for the buckers. The Ericksons got approval from their insurance company for this unusual practice. They say a power saw man produces 100 more sticks a day by having his wife work with him.

In felling operations, cutting areas are divided into marked strips about 100 ft. wide, laid out at right angles to haul roads. One or two men cut out a strip completely before moving on to another. Fallers put up four to six cords a day and are paid by the stick, which includes felling, limbing, bucking, stacking and slash piling. Trees are cut flush to ground in centerways of strips so trucks may travel easily to collect loads.

Homelite saws are used for falling and bucking. About 60 of the crews are power saw men. They earn over \$100 a week, and up to \$200 a week or more.

#### **Employs 90 Men**

In the two camps, the Ericsons employ some 90 men from early May until the heavy snows come in October. It will reach 50 degrees below zero here in winter and snow sometimes piles as high as house eaves. But on the same day, it may be warm enough at 10 a.m. to go outside in shirtsleeves. The Union Pacific Railroad has to plow its way into West Yellowstone each spring. During the logging season, the temperature often bounces from 35 degrees in the morning to 80 or 90 in the afternoon.

#### **Wood Costs**

Even with the government tax on railroad freight repealed this year, the rate for shipping this wood to Kaukauna, Wis., is \$18.76 a cord. An additional \$14 a cord is paid to the contractor. In view of the freight rates

and also because of the hundreds of thousands of square miles of national forests which are disease-and-insect-infested, and should be cut out and used while still of some value, many loggers complain that the U.S. Forest Service is unrealistic in its contract terms.

Now there is a new much lower \$10 freight rate from the Black Hills country in the Dakotas to the Lake States and it may appeal to producers of pulpwood and turn some interest away from the Rockies.

Important to Thilmany is that all the wood from this West Yellowstone area is clear lodgepole. While it costs \$7 or \$8 more than most of the wood in the Lake States, it is of a desirable quality. Poor stuff is thrown out.

While logging is at high altitude, Charles Ericson described the sites "as good ground and not too rough or

steep." What PULP & PAPER's editor saw of the country was not anywhere near as rough or as steep terrain as is commonly being logged on the North Pacific coast. Most of the wood is 6 to 12 in. diameter.

#### Silvicultural Benefits

The lodgepole in this area at the "roof of the continent" is found in pure, dense stands of up to 75 cords per acre. Cutting is permitted where it will do the most good for the forests. Old stands, where growth is stagnated, is being clear cut.

The silvicultural benefits of these operations are obvious. Heavily mistle-toed and stagnated trees of little use for lumber or poles are now being cut, and excellent utilization results, while providing seed for a new crop from cones in the slash. The National Forest staff here realizes the great benefits and is making constructive plans, while doing a careful job of management, which will result in substantially increasing production in these forests in the future.

Until pulpwood logging came along, to augment the pole and lumber cutting, the forest management job was a difficult and discouraging one for the U.S. foresters.

## Mostly Finns, They Like This Logging

Charles Ericson has been serving only one company—Thilmany Pulp & Paper—as a pulpwood producer for over 30 years. Until he started up this West Yellowstone, Mont., operation, he logged for Thilmany in Minnesota and upper Michigan. He also has an oil business in Negaunee, Mich., which occupies his time in the winter. (The Ericsons live in nearby Republic, Mich.) Mrs. Ericson also spends the summer with him on the Montana-Idaho border.

Their son, Gordon, shares overall responsibility and he is an expert at keeping equipment in shape.

Rudy Thulin and Gus Johnson are the superintendents. They run the Idaho and Montana shows, but when one is shut down they work together. Emil Hangas is bookkeeper.

The crew is made up of Scandinavians, mostly Finns and Finnish is commonly spoken. More experienced men were brought from Michigan and Minnesota and others were hired locally. About one-third are married. The Ericsons say it isn't hard to get choice crews for this famous outdoor play country, and so they have weeded them down to a sober, serious outfit,



CHARLES ERICSON . . . serving Thilmany for 30 years.

with quiet family lives, and many of the men and their wives sing in West Yellowstone church choir.

"They eat all the time," said the Ericsons. They take lunches to the woods for snacks. There is no rule against talking at meals, as at some camps (to speed up the feeding). "We don't need any such rule," they said. "Our men never talk too much."



Douglass . . . . . Beltz . . . . . Beles

## U.S.F.S. Revises Timber Sale Policy

U. S. Forest Service has announced, "effective immediately," a revision of its policy on the extension of timber sale contracts. The stated reason is "to prevent undesirable speculation in national forest timber offered for sale."

Under the new policy, failure on the part of the timber purchaser to cut timber within the specified time limits will result in termination of the timber sale contract unless certain conditions prevail and the purchaser applies for and receives a time extension. With respect to uncut timber, if no extension is granted, the purchaser is liable for paying any difference between the contract price rates and the reduced rate caused by lower current market values than when the contract was made.

Regional spokesmen emphasized that extensions generally will be processed only when the termination date of a sale is near and the remaining uncut timber cannot be cut out and removed by the closing date. Extensions may be granted earlier in two situations: 1, to permit the purchaser to log other USFS timber more urgently in need of cutting; 2, when he presents definite plans for interrupting operations in order to log

other timber and the delay will not be of disadvantage to the federal organization.

Before the Forest Service considers a request for extension, the purchaser may be required to present his schedule for completing road construction and timber cutting in order to fulfill his contract obligation in the proposed extension period, including his plan for meeting obligations of the same kind under any other national forest timber sale contracts he holds.



Robert E. Peterson Joins Soderhamn Machine Mfg. Co.

. . . as sales engineer of the firm's West Coast office. He was formerly on the staff of the Western Pine Assn. Research Laboratory.

#### New Marketing Division at Thew

A. W. SMYTHE, vice pres. and gen. mgr., The Thew Shovel Co., Lorain, O., announces formation of a Marketing Division for the company's Lorain line of power shovels and cranes and Moto-Loader line of front end loaders. D. L. DOUGLASS, in the newly-created position of director of marketing, has been appointed to administer the new division. He was vice pres. and sales manager of a competitive manufacturer, and was asst. to the president of Thew. M. B. GARNER, resigned as director of sales and this title is discontinued. He remains as vice pres. and director. Field sales and distribution will continue under G. E. Gunther, sales mgr. for shovels and cranes, W. H. MADDEN, for loaders, and F. S. BATTIN, export sales manager.

J. L. BELTZ, moves from director of sales promotion to mgr., marketing staff. Mr. Douglass has appointed J. F. BELES as manager of parts and service with headquarters in Elyria, O. For 8 years he has been West Coast district mgr. in San Francisco. Three appointments were made by Mr. Beltz: C. S. WEBER, advertising mgr. for 10 years is now adv. & sales promotion mgr. Q. J. WINSON was appointed product development mgr. LOU RADAKOVICH moves from parts sales mgr. to training mgr.

## B.C. Tree Farm Licensee Undertakes "Onerous Responsibilities," says Spokesman

Independent loggers and other groups have been criticizing British Columbia's Tree Farm license system on the ground that it favors license holders in bidding for additional timber. They have taken their case to Gordon Sloan, the provincial government's special advisor, who has been conducting hearings (Tree Farm is the new name adopted for B.C. timber allotments under forest management licenses).

Spokesmen for all the major integrated companies have appeared before this new Sloan inquiry to refute this contention. They have included Angus MacBean, chief forester, MacMillan & Bloedel; T. G. Wright, chief forester, Canadian Forest Products; H. J. Hodgins, vice president, Crown Zellerbach Canada, who represented Canadian Pulp & Paper Association; Ian C. McQueen, Western Plywood Co., and Robert B. Walkley, woods manager, Kootenay Forest Products.

"The allegation that Tree Farm licensees have special advantages has no basis in fact," declared Mr. Hodgins, "because of the risks, responsibilities and obligations assumed by the holder in return for an assured timber supply."

Mr. Hodgins explained that licensees undertake such costly measures as pledging their own lands to sustained yield management, accepting cutting restrictions to within certain limits thus losing the opportunity to take full advantage of markets without severe penalty, submitting working plans for approval and protecting the entire licensed area from fire and insect peril, carrying out reforestation, road-building and forestry research.

"The B.C. Forest Act originally was based on the premise that crown timber was available to all by competition," said Mr. Hodgins. "In 1947 the legislation was amended by making provision for forest management (Tree Farm) licenses which were intended to obtain greater industrial stability and investment and sound sustained yield forestry."

"This was a departure from the principle of disposing of crown timber by competition. The departure is justified in a Tree Farm license area because the licensee undertook onerous obligations which in their cumulative effect made his timber more costly."

"As most license holders do not have sufficient timber to fill their plant capacity needs from the sustained

yield of the licensed area, a supplementary source of wood is absolutely essential. A Tree Farm license is established as a legal form of tenure and it was negotiated in good faith under established law without any restrictions with respect to acquiring other crown timber."

### Crossett Proceedings Available from Yale

Proceedings of the seventh Industrial Forestry Seminar, held under direction of the Yale School of Forestry at Crossett, Ark., Oct. 7-18, 1957, have been published.

The 432-page volume contains the complete proceedings, including formal papers of leaders and discussions by the entire seminar group. It also carries a list of all foresters enrolled.

The proceedings are available at \$6.00 per copy, from Yale School of Forestry, 205 Prospect St., New Haven 11, Conn., postpaid if check accompanies order.

The school also has a limited supply of proceedings from the earlier seminars still available for purchase: Second and Third Seminars combined (1955 and 1956)—\$6.00, and Fourth Seminar (leaders papers only) (1956) \$2.50, says Z. W. White, professor of industrial forestry.



### Is this South's "Best" Tree?

International Paper Co. thinks this may be the top pine tree growing in the South today—certainly one of the best. In Big Kilsock Bay near Georgetown, S.C., in a stand of superior pines, tree is now 22 years old, stands 73 ft. tall. In 1955 its diameter at breast height was 15.2 in. Now it is 16.6 in. Average in this stand is 56 ft. with a diameter of 8.8 in. I.P. was so proud of this giant they have erected a sign next to it, are using its cones in genetics work.

## Push Buttons Fill Grinders at Powell River

Only four men constitute the crew feeding the four new Great Northern Watrous grinders, each with a rated capacity of 50 to 60 tons of groundwood daily, at Powell River Co.'s new groundwood mill, Powell River, B.C. Total crew consists of a conveyor operator, grinder operator, a jiggerman in charge, and a grinderman's helper. This contrasts with the large crews necessitated under the old manual feed system.

Often the blocks leave the flume and are conveyed into grinder pockets without having been touched by the operators.

The flume carries blocks to the lower spike rolls of the de-watering conveyor where they are picked up and straightened before being delivered to a 48-in. rubber belt conveyor. The TV camera is at the flume

discharge with its receiver inside the grinder room. From the belt, blocks discharge down the chute onto a spike roll conveyor which throws them to a block-straightening chain conveyor. Blocks drop to a four chain conveyor deck until they are opposite the grinder pocket which the operator wishes to fill.

The operator, seated on a motor driven rail car above the conveyors, operates push buttons, in easy reach, to fill each pocket. A light indicates the next pocket requiring filling. He drives his car to the midpoint between the pockets and grinder to repeat the filling operation. An operator can control any section of the main four deck conveyor from any grinder position, but can only operate the drop skids, spike rolls and stop pins opposite the grinder where he stops his car.





### For Better Land Management, Neighborhood Forestry . . .

STAN HAMILTON (right), Wood Mgr., West Virginia Pulp and Paper Co., Mechanicville, N.Y., shows Farmer WALLY BROWN (middle), how to make an improvement cut. DOUG LUKE (left), District Forester, Westvaco, says that's . . .

## How West Virginia is Aiding Farmers

● There are six ways West Virginia Pulp and Paper Co. is helping Northeast farmers. A PULP & PAPER editor in upper New York saw first-hand how it works.

Stan Hamilton, manager, wood dept. West Virginia's Mechanicville, N.Y., mill, likes to call it "our Neighborhood Forestry Program."

This 6-point program is an extension service to its wood procurement policy. Essentially, Westvaco has announced its foresters will serve as consultants in activities such as:

1. Advise landowners on forest management and cutting practices.
2. Mark timber and estimate volume on timberlands where wood production will include pulpwood.
3. Aid landowners in techniques of more profitable timber sales and sug-

gest the importance of contractual relationships.

4. Help to insure that timber sales and cutting operations are completed to the satisfaction of all concerned.

5. Promote better utilization and more efficient operation through integration of log and pulpwood production.

6. Actively search out ways and means of conducting all phases of woods operations more economically, thus lowering costs of operations and in the long run extending the revenues accruing to landowners.

### Time to Take Action . . .

Explains Mr. Hamilton, "Now is the time to step in with good forest management. There's been lots of talk about integrated operations—but very

few have done anything about it. You can get something out of undesirable species, defective trees and tree tops. Other stands can be managed for pulpwood. Foresters in general haven't pushed it, but we see advantages in it for the owner. For us, it will mean more pulpwood and a steady supply with quality constantly improving.

"For the landowner, it means that marked jobs will retain his growing stock. In being a source for market information, West Virginia will render services as well as to receive them from potential producers. It is a program in community relations for mutual benefits.

"Another thing. Take an operator like Henry Cramer (a 31-year-old sawlog and pulpwood logger in Greene County, N. Y., visited by PULP & PAPER). In a balanced operation such as he has, everything must run smoothly with seven-eighths of the usual investment. He has a balanced producing unit. Equipment must be geared to production.

"In promoting better forest management, by landowners and better utilization by operators, West Virginia recognizes two major objectives: first, to demonstrate that pulpwood has a real place in the management of forest properties. Too often pulpwood production has been considered an end in itself by both landowner and operator alike. We believe that attitude can be changed. Second, the productive potential of timberlands within our procurement area is high; that potential should be realized to the support of the landowner and the wood-using industries."

### The Way It Works . . .

In action, neighborhood forestry works this way. Stopping in for a cup of coffee in a diner near Chatham, N.Y., Forester George Quaile struck



### Menaces to Springtime Production . . .

Springtime mud slows tempo of pulpwood production in the Northeast. Here, D-2 "Cat" maneuvers Hyster arch through some "difficult terrain."



Equally frustrating are these signs posted along main roads. This sign on a Catskill road is effective in keeping wood from mill.

up a conversation with a local landowner.

"This landowner allowed that he had some woods which had been logged by a lumber company some years back. Thought it was time for another cut. I told the farmer we'd be glad to come over, look his land over and mark it for him," recalled Mr. Quaile.

"How much do you fellows charge for this?" asked the farmer.

"Not a cent," said the West Virginia forester.

"How come? How can your company afford that?"

"It's part of our business—buying wood today and concerning ourselves about supply for the years ahead."

Mr. Quaile accepted the farmer's invitation and, during PULP & PAPER's visit, had marked some 30 acres. "This was strictly an improve-

ment cut," he explained. "I just marked to try to improve this stand. Suggested some patch clear cutting to reproduce certain species. Made some species selections. I'm favoring oak and tulip poplar here. I marked about 40 cords for pulpwood and about 5,000 ft. of timber; aiming for 60 sq. ft. basal area."

"What is interesting about this particular job is that the farmer will cut the timber himself. He will have pulpwood and logs for sale."

Summing it up, Mr. Hamilton told PULP & PAPER, "I am sure you understand we have only just started in this extension forestry work. There is a long way to go and much to be done in our neighborhood forestry program. Our efforts, I am confident, will eventually be recognized as a contribution to good economy for the community."

## Outside Chip Storage Problems in South

Charleston, S.C.  
Editor: I have read with great interest Mr. Louis H. Blackerby's timely and informative article, "Outside Chip Storage" in September's issue of PULP & PAPER.

We have been considering some type of chip storage here at Charleston but have not made a final decision on any type. We use pine primarily in our kraft operation with a small percentage (less than 10%) of hardwood chips from gum, maple, and poplar. Do you have available any studies on outside storage of pine chips only?

We are concerned with the effect of fly ash contamination in outside storage. Since no mention of such contamination was made in your article, this might not be a problem on the west coast.

We would appreciate any information you might have on degradation of Southern pine chips and also the length of time that this species might be stored. At present we are receiving approximately 3000 cords weekly of pine chips from sawmills. This is nearly 25% of our raw material.

R. W. PARSELL

Chip Program Coordinator  
West Virginia Pulp and Paper Co.

### Western Editor Blackerby Replies

Dear Mr. Parsell:

I am pleased to receive your letter concerning outside chip storage. It

came to my attention upon returning to the office following a vacation. This explains the apparent tardiness of my reply.

As to the rate of degradation of Southern pine chips and how long these can suitably be stored, there is much yet to be learned. Although technical information can be found concerning storage qualities of Southern woods in their natural state, meaningful information pertaining to storage qualities of these same woods in chip form is in woefully short supply.

There are reports that one large Southern pulp and paper company is in the throes of a study to determine the information you are seeking. Apparently the basic data are being developed at several points and submitted to company headquarters for compilation. It may well be that this study will at least provide sufficient fundamentals that mills could safely institute chip-storage programs based on conservative time factors.

Organizations storing chips outside report giving extensive consideration to fly ash. First is the matter of determining the type of airborne material. If it's chemical ash from the recovery unit, I'm told "this doesn't hurt." But carboniferous ash from oil, wood or coal burning boilers can be "dynamite", as one mill operator stated. He emphasized the importance of improving combustion in the powerhouse in such cases.

Fly ash from sawmill refuse burners presented difficulties in some Pacific Northwest communities but this, fortunately, is diminishing as residue utilization increases.

The answer, in addition to minimizing the production of fly ash, lies in locating the chip storage pile in the most favorable position in relationship to prevailing winds and problem sources. One of the important preliminary factors in selecting the storage area is to determine just where fly ash does and does not present a problem. As far as I can ascertain this is carried out on a practical basis by setting fly ash traps throughout the potential areas for a given length of time and evaluating the resultant collection.

Some operators cover 12 x 12-in. pieces of board with aluminum foil and coat the metallic surface with petrolatum for retaining the solids which settle on the trap. This technique provides a rather objective indication as to the relationship of one area to another, but I don't know of it having been used as a straight index to determine whether or not an area would or would not be suitable for storing pulp chips.

It might be that outside storage of chips in the South could, besides being economically expedient, result in processing benefits (less foam, pitch, etc.) such as has been experienced by some mills here on the Pacific Coast.

Please let me know if I can be of further help to you.

L. H. BLACKERBY

Western Editor, Pulp & Paper

## Last CZ Railroad Goes; More Production by Truck

Another of the few company-owned logging railroads remaining in the Pacific Northwest yields to trucks. Crown Zellerbach Corp. is shifting from rail bed to truck bed this fall at its tree farm operations in southwest Washington. This is the last of Crown's logging railroads in Oregon or Washington.

The rail line, which had its start some 75 years ago, extends 26 miles from the Columbia River at Cathlamet up the Alochoman Valley. The new setup opens opportunities for future increases in per-acre yield. Pre-logging of old growth stands, a production phase adaptable to truck logging, will salvage material which would be uneconomic or lost through breakage during prime logging. Re-logging, subsequent to prime logging, further increases the wood yield. By maintaining favorable growing conditions and intensive salvaging, it is possible to practically double forest production.

## **"FLEXIBLE" PLANT HEATING BY "BUFFALO"**

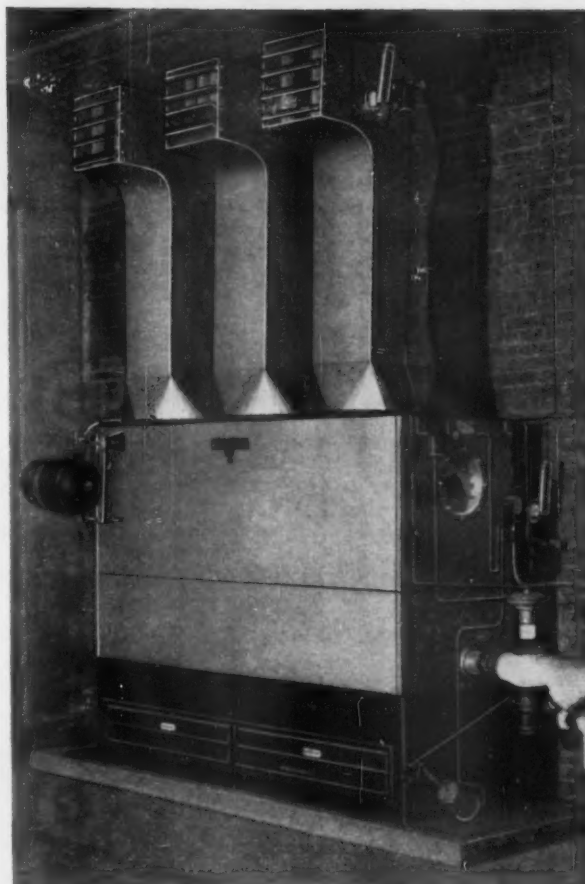
**IS ECONOMICAL - SAVES  
PRODUCTIVE FLOOR SPACE**

- Easy, Fast Installation
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- Quick, Easy Maintenance
- Long, Trouble-Free Life

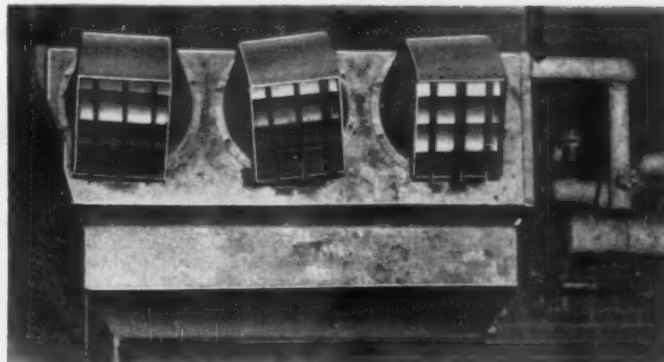
"Buffalo" Unit Heaters are compact, versatile, practical . . . easily adaptable to any and all of your plant heating and ventilating needs.

If your heating requirements are localized, you can use one or more "Buffalo" Unit Heaters of correct capacity to supply warm air or ventilation to a certain specific area in your plant. Or, you can use a battery of these flexible units to heat your entire plant . . . economically and efficiently.

Here are some of the many unique advantages you will find in "Buffalo" Unit Heaters: non-freeze "Aero-fin" coils radiate maximum heat, permit space-saving design. Sectionalized construction speeds installation. Easily-accessible, standardized parts — plus outside-lubricated fan bearings — facilitate maintenance. Smooth, quiet, efficient "Buffalo" fans insure optimum heat. Swivel outlets aim air-flow where it's needed. Heavy-duty paneling, fans, swivel outlets, coils and bearings insure long life with minimum attention. "Q" factor construction — the built-in Quality that provides trouble-free satisfaction and long life is in every "Buffalo" product.



Compact "Highboy"  
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Ceiling Areas.



Suspended "Lowboy"  
Unit Heater Requires  
No Floor Space

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Buffalo, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING    AIR CLEANING    AIR TEMPERING    INDUCED DRAFT    EXHAUSTING  
FORCED DRAFT    COOLING    HEATING    PRESSURE BLOWING



Conduit box can be located top, bottom, or either side.

Control hand wheel can be positioned on top or either side.

All end-bracket assemblies are interchangeable for repositioning of drive components.

GET ALL THESE VARIATIONS FROM ONE BASIC DESIGN — *with wrench and screwdriver!*

Output shaft can be high or low, right or left.

Motor can be mounted top or bottom.

Detachable feet can be bolted to bottom, side, or top for floor, wall, or ceiling mounting.

Just two of many variations that can be made from a standard ALLISPEDE DRIVE.

## The ALLISPEDE\* DRIVE gives you complete field versatility!

It's the most flexible and precise mechanical adjustable speed drive made ... and the only one that can be fully adapted in the field!

The all-new ALLISPEDE DRIVE is the answer to any motor application that calls for low-cost adjustable speed. It permits smooth, easy speed adjustment — and maintains it exactly. Its modern design permits unusual field-flexibility — lets the user change the unit any time to suit his various requirements.

The a-c ALLISPEDE DRIVE is the *only* drive that can be fully adapted in the field by the user. The basic unit goes together like building-blocks ... feet, end brackets, control hand wheel, conduit box, and output shaft can be relocated in minutes to fit existing space limitations. The same unit can be changed from an upright to a horizontal drive for floor, wall or ceiling mounting. And all you need is a wrench and screwdriver!

Superior design improves drive efficiency and extends service life. The four bearings equally distribute belt load, increasing bearing and belt life. Movable discs slide smoothly on internally-lubricated splined shafts — won't stick in place or wear. Belt changes are faster

— never disturb the dial or adjustment mechanism. Rugged cast-iron housing with plated steel covers shields drive against dirt and corrosion ... integral rotor fan cools the motor and force-ventilates the drive housing to extend bearing life. Oversize cartridge bearings are pressed on shaft and lubricated at the factory. Corrosion-resistant stainless steel nameplates diagram proper motor connection, specify bearing sizes, and carry complete instructions for operation and lubrication.

The ALLISPEDE DRIVE can be supplied with in-line or right-angle integral gears, brake and tachometer. Sizes from 1 to 20 HP with speed variations up to 8:1. Electrical and mechanical modifications are available to meet special requirements for any application.

Contact your Louis Allis District Office or Distributor for complete information and engineering assistance. Or write for Bulletin 3300, The Louis Allis Co., 444 E. Stewart Street, Milwaukee 1, Wisconsin.

\*ALLISPEDE is a trademark of The Louis Allis Co.

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# LOUIS ALLIS

November 1958 — PULP & PAPER

## Northeast

### Memo from MRC

BAKER MIDDLETON is new director of personnel for Scott Paper Co., and reports directly to ANDREW J. SCHRODER, 2ND, Scott's administrative vice president. He was civilian personnel officer at Aberdeen Proving Ground. . . .

HERB JACQUES is now tech. director, Finch, Pruyn & Co., Inc. . . . HERB MITCHELL succeeds Sartell-bound JACK McDERMOTT as beater room super at St. Regis Paper Co.'s. Deferiet, N.Y. mill. . . . LEONARD RUSSEL, St. Regis' Herrings mill converting super, has retired. . . .

CLARK E. THORP is pres. of Fiber Products Research Center, Inc. at Beaver Falls, N.Y. . . . CHARLES G. WOLFE, chem. engineer, formerly with Allied Paper Corp. and KVP Co. has joined Fitchburg Paper Co. . . . EDWARD H. ELLIOTT is industrial sales rep for Warren Pumps, Inc. in Philadelphia area with headquarters at 419 Wyndon Rd., Ambler, Pa. Phone: Mitchel 6-7821. . . .

R. CARL CHANDLER, chairman, Standard Packaging Corp., has moved their offices to two floors of the J. P. Lorillard Bldg., 200 East 42 St., N.Y.C. 17. . . . LESLIE E. PEARSON, formerly with S. D. Warren as industrial engineer, has moved over to Southworth Machine Co. as mgr.-paper mill div. . . .

FRED H. GILCREST is tech. asst. to

director of product development Solvay Process Div.; DR. ROBERT H. REED is director of research; DR. HERBERT C. WHOLERS becomes asst. director. . . .

ROY DONOVAN is now asst. product mgr. for The Keyes Fibre Co. Gen. SPAULDING S. BISBEE, vice pres., asst. treas. and director of Keyes, died last August. . . . DAVID HOUSEN, pres., Erving Paper Mills and ERNEST L. DESROSIERS, supt of stock preparation, are celebrating their 30th year with the company. MARSHAL M. H. DANA is now director of marketing for New York and Penn. WALTER BRIGGS steps up as sales mgr. . . . HAROLD DE V. PARTRIDGE, formerly with Rayonier, has joined the research and development dept. of Brown Co., Berlin, N.H. . . . LOUIS L. MRACHEK is now asst. to the mgr. of The Mead Corp's. Leominster, Mass. mill. . . .

JOE LOOMER has been promoted to mgr. of sales development for the Gair div., Continental Can Co. BOB McPHETERS steps in as tech. director of Gould Paper Co. . . . FRANK HASKINS is a chemist for The John A. Mannin Paper Co. . . .

HOWARD "HOWDY" VANDERBERG, The Hubinger Co. and his wife, PEG, recently completed a two-month swing through New England. We bumped into the Vanderbergs in Glens Falls, N.Y. where D. A. "PAT" MORAN was also visiting. Pat's now representing Mount Hope Machine Co. . . .

THOMAS E. MOFFITT, pres., Hooker Chem. Corp., Niagara Falls, N.Y., succeeds R. LINDLEY MURRAY, board chairman, as chief exec. officer of the company. Mr. Moffitt also succeeds Mr. Murtay as pres. of Marble-Nye Co., Worcester, Mass., subsidiary of Hooker. JOHN C. DIEFFENDERFER, retired Hercules Powder Co. Paper Makers Chemical Dept. sales exec., died suddenly Sept. 27 at his home in Fort Lauderdale, Fla. . . .

### Directors of Fibre Box Assn.

Re-elected directors of the Fibre Box Assn. are: JOHN T. HARRISON, Union Bag-Camp Paper Corp.; ROBERT M. BRIGGS, gen. sales mgr., Menasha Wooden Ware Corp.; CHARLES U. HARVEY, gen. sales mgr., Fibre Drum and Corrugated Box div., Continental Can Co.; RALPH A. WILKINS, vice pres., Bird and Son; WAYNE W. JACKSON, pres., Hoerner Boxes, Inc.; LLOYD MERWIN, vice pres., Crown Zellerbach Corp., and gen. mgr. for converted products, Gaylord Container Corp., div. of CZ; FRED W. OLDENBURG, sr. vice pres., American Box Board Co.; NORMAN H. STONE, pres. and board chairman, Stone Container Corp.; RAN-

### Dictionary of Pulp and Papermaking Terms

By Curtis L. Brown

Barium—Undertaker's job  
Creeping process—Up the stairs after midnight  
Curley tester—Casanova  
Lubrication—Bribe  
Stock control—51% of the shares  
Top management—The boss's wife  
Underlay—Mattress  
Wetting agent—Baby

DALL A. ROSS, st. vice pres., Cornell Paperboard Products Co.; and MELVIN I. BRUCKER, exec. vice pres., David Weber Co. J. H. FOLKERTH, vice pres., Birmingham Paper Co., was elected a director.

### 3,093 St. Regis Employees Receive Awards

A total of 3,093 employees of St. Regis Paper Co. will receive awards this year in recognition of five or more years service, almost twice the number who received awards in 1957.

At Deferiet, N.Y., mill, a full-cut diamond will be given to PETER TRUCHAN, celebrating his 45th year with St. Regis. Forty-year emblems with cut diamonds go to EDGAR S. ADRIAN, PERCY E. DESHAW, FRANK J. KONIASZ, FRANK J. LA-PIERRE, and KEITH L. MARTIN, all of Deferiet, and EDWARD C. SALK and JAMES H. SPENCE of the Sartell, Minn., mill.



Lyle Lang



John Turner

### Key Men for Mexico's New Mill

LYLE LANG, for many years sulfite supt. at Bowater's Newfoundland Paper Mills, Corner Brook, Newf., has moved to Tuxtepec, Oaxaca, Mexico, to be production mgr. of the new Fabricas de Papel Tuxtepec, S.A. de C.V. which is expected to produce about half of Mexico's newsprint needs. Mr. Lang is a brother of the late Curly Lang and member of the Lang family which have been prominent in the U.S. industry. JOHN TURNER has joined Tuxtepec as paper mill supt. ARTHUR PALMER, who retired last February as groundwood supt. for Crown Zellerbach, West Linn, Ore., also has joined Tuxtepec.



### Bob McClellan Returns to U.S. To Head Nopco Industrial Sales

Elected vice president of Nopco Chemical Co. and general sales manager of its Industrial Sales Division, ROBERT F. McCLELLAN moves to headquarters of this firm at 60 Park Place, Newark 1, N. Y. For the past five years he has been head of Canadian affiliate company, Nopco Chemical of Canada Ltd. Prior to that was district sales mgr. in Chicago, covering the Lake States area where he was well known in pulp and paper industry circles. RICHARD F. DESPAIN, who lives in Glenview, Ill., succeeded him in the Chicago office.

## PULP & PAPER

## Strictly Personal

### St. Regis Pulp Sales Changes Are Announced

Following appointments and changes in the Pulp Department of St. Regis Paper Co. are announced by JOHN E. BECKER, general mgr.—Pulp Dept.:

U.S. pulp sales manager—WILLIAM M. McNAIR—St. Regis Paper Co., 261 Madison Ave., New York 16, N. Y.;

Eastern pulp sales representative—A. T. HUSSEY—same address;

Mid-Western pulp sales representative

—RALPH W. WEHMHOF—St. Regis Paper Co., 18 So. Michigan Ave., Chicago 3, Ill.

Canadian pulp sales manager—COLIN MARQUIS—St. Regis Paper Co. (Canada) Ltd., 924 Canada Cement Building, Montreal 2, Canada; Ontario Pulp Sales Manager—B. G. R. COTTERILL—St. Regis Paper Co. (Canada) Ltd., 360 Bay Street, Toronto, Canada.

WILLIAM M. CROSBY has been granted a leave of absence from St. Regis in order to attend Harvard Business School.



### Singletary Joins Eastwood

The Eastwood-Nealley Corp. announces appointment of FRANK H. (CURLY) SINGLETARY of Ocean Springs, Miss., to serve as a sales and service representative in the Southern territory, Sept. 15, 1958. He will serve as a team with ALBERT (TINK) HARDAKER, who is already established as an Eastwood-Nealley representative in the South. Singletary will succeed VERNON KNIGHT, who was obliged to resign for reasons of health in order to enter a local business in Mobile which doesn't require extensive travel. Mr. Knight's many friends may reach him at 312 South Monterey Street, Mobile 19, Ala. Mr. Singletary has served 30 years in the paper industry in the South. He rose through the ranks to paper mill supt. and is thoroughly familiar with papermaking problems.



Richter • Dahl • Laakso

### Changes in Kamyrt In Sweden and U.S.A.

AB Kamyrt, Karlstad (Sweden) was founded for the purpose of developing new machinery and new processes for the pulp industry. Because of the rapid growth of this industry, machinery developed by AB Kamyrt is now manufactured in many countries and the company has become a world-wide organization. This has made it necessary for the company to undertake not only development work, but also many additional tasks of a more commercial nature.

AB Kamyrt has therefore decided to form a division within the organization which will be responsible for furthering and coordinating all technical developments of AB Kamyrt and its subsidiaries and affiliated companies.

JOHAN RICHTER, president of AB Kamyrt, has expressed the desire to be relieved of his commercial and administrative duties in order to devote all his time to development work, and he will therefore take charge of the new division.

KNUT DAHL, president of Kamyrt, Inc., Hudson Falls, N.Y., will succeed Mr. Richter as president of AB Kamyrt, Karlstad, and will return to Europe this fall. OLIVER A. LAAKSO, formerly of H. A. Simons Ltd., Vancouver, B.C., will take over as president of Kamyrt, Inc., Hudson Falls.

## This bolt cost \$6000!

It cost a Northwestern sawmill \$6,000 to find this bolt—too late! That's the price paid to repair their chipper after the bolt went through. Had a Rader Metal Detector been in operation at the plant, the conveyor and chipper would have been halted and the bolt removed before the damage occurred.

Think what inexpensive insurance a Rader Metal Detector would be for your plant. The prevention of damage to gears, teeth, blades, and knives from one or two pieces of metal could more than pay for the detector.

Designed and manufactured by Industrial Electronics, Co., Chelalis, Washington, for Rader, it will detect nonmagnetic as well as magnetic metal and actuate any circuit to stop chippers, sound alarms, or flash warning lights.

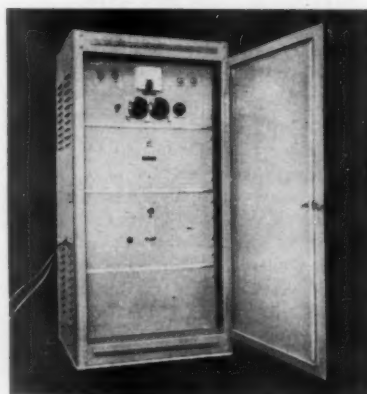


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Boston 94, Mass.  
Box 3386, Memphis 17, Tennessee  
Box 55, Lockport, Illinois





#### Houghton & Co. Changes

DAVID J. RICHARDS has retired as vice pres.-sales and director of E. F. Houghton & Co., Philadelphia, and two other executives have been promoted. They are: FRANK ROSS to vice pres.-sales and CHARLES R. SCHMITT to assistant to vice pres.-sales. Mr. Richards served 41 years with Houghton. Mr. Ross was formerly assistant to him. He and Mr. Schmitt came with Houghton in 1942.

#### Southern

##### Memo from WFD

The Southern exposure: DELBERT M. BUSH is to be paper mill supt. of the new coated magazine paper mill being built jointly by Crown Zellerbach Corp. and Time, Inc., the St. Francisville (La.) Pulp and Paper Co. He was paper mill day foreman at Crown Z's West Linn, Ore., mill. . . .

JOHN M. MACBRAYNE head of the Union Bag-Camp general services at Savannah, becomes director of the newly created company-wide general services. Replacing him in Savannah is R. J. CUMMINGS, onetime production control analyst. FRED C. CAME, industrial engineering coordinator, becomes mgr. of industrial engineering services with offices in New York. CREED H. REAGAN, is new chief industrial engineer. . . .

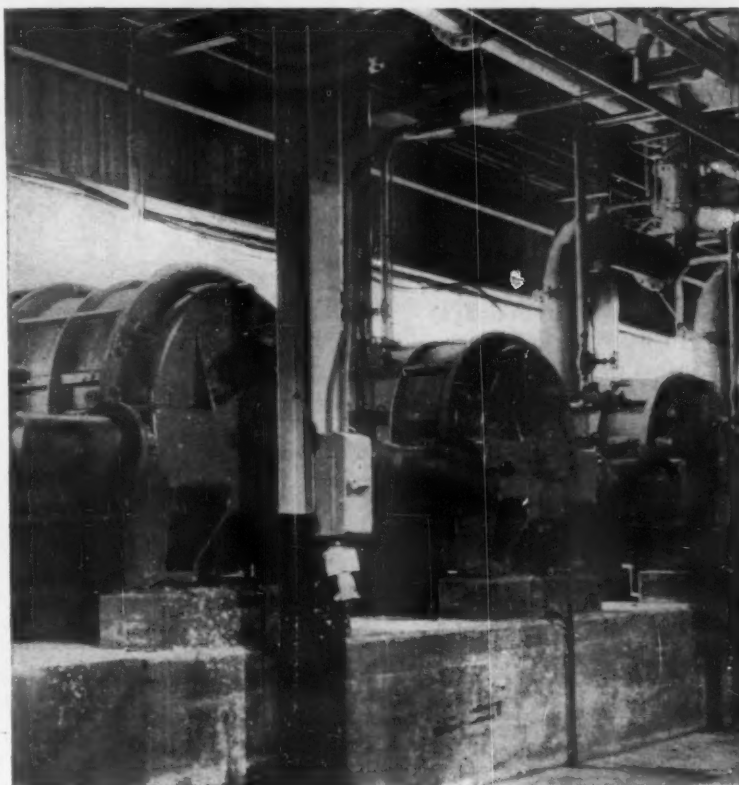
VERTREES YOUNG, who retired July 31 as vice pres. and gen. mgr. of Crown Zellerbach's Caylord Container Div. in Bogalusa, La., has been named a director of C-Z, replacing JOSEPH M. ARNDT, who recently retired. . . .

Two new staff engineers have joined Gulf States Paper Corp. JOSEPH H. KUHN, formerly chief engineer of Wausau Paper Mills Co. in Wisconsin, and Marathon, in Rothschild, Wis., has become administrative eng. under plant eng. WARREN TUCKER. WILLIAM E. FORMAN, a 1950 graduate of Georgia Tech and former member of the U.S. Air Force, has joined the staff as a professional engineer. . . .

Boiler Equipment Co. of Atlanta, representing Cochrane Corp., has moved to new offices at 1079 Alco St., Atlanta 24—post office box 13138. . . . FRED C. BARRETT, mgr. of National Container's Atlanta plant since 1921, has retired. . . .

ROBERT S. WILLIAMS, 36, paper mill supt. at Marathon Southern Corp., Naheola, Ala., died on Sept. 5 a week after suffering a heart attack. . . . J. E. WATSON JR., former mgr. of the Miami district of Allis-Chalmers Industries Group, has been appointed mgr. of the firm's New Orleans district. He succeeds R. F. MULLER who retired Oct. 1 after 38 years with the New Orleans district. Mr. Watson is a graduate of Duke U. and joined A-C in 1949. . . .

## What, actually, do Vacuum Pumps on paper machines handle?



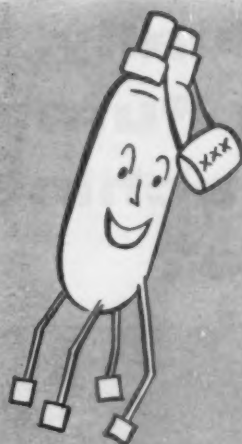
Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

### NASH ENGINEERING COMPANY

443 WILSON ROAD, SO. NORWALK, CONN.



## F.D.D. TO THE RESCUE

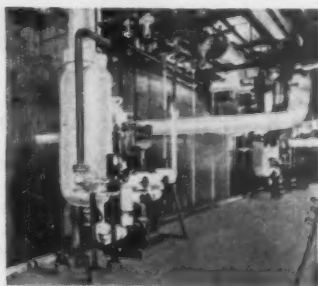
### An F.D.D. System (Fulton Dryer Drainage) Will, With Certainty:

- Give you substantially more drying capacity and on a lower steam input.
- Give you properly graduated drying temperatures, hence uniform drying.
- Reduce shrinkage, cockling, hardening, curling and cut down on broke.
- Give you automatic control under all conditions.

Very few modern machines operate without Fulton systems and many an older machine is also getting a Fulton dryer rejuvenation.

Seasoned experience with drying problems, backed by adequate service are yours when you install a new Fulton system or rebuild an old one.

#### Get technical Bulletin



### ROSS MIDWEST FULTON CORP. DAYTON, OHIO

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—Toronto—Port Arthur—Vancouver

## PULP & PAPER

## Strictly Personal

ROY J. TRAMMELL, supt., board mfg. dept., Champion Paper and Fibre Co.'s Carolina div., retired July 1 after almost 52 years of continuous employment with the div. He started as a teen-age water boy during construction of the Canton, N.C., mill. . . . GEORGE KLEINMAN, formerly of the Whiting Corp.'s Houston district office, is transferred to the district office at Charlotte, N.C. . . . MELVIN J. BEAGLE JR. moves from the main offices of the Swenson Evaporator Co., div. of Whiting Corp., at Harvey, Ill., to the company's district office in Houston, Tex. . . . WALTER R. WILLIAMS JR., comptroller, Coosa River Newsprint Co., Coosa Pines, Ala., was elected secy-treas. of the Birmingham Control of the Controllers Institute of America. . . .



### Menius Chairman's S.W. Group

Leonard W. Menius has been personnel director at East Texas P&P since 1954. For eight years before that, he was in industrial relations at Union Bag in Savannah. He graduated from Davidson College, with a master's from U. of N.C. in industrial psychology.

### Paper and Pulpwood Groups Hold Conference in Texas

The Community Relations Service of the Southwestern Paper and Pulpwood Consuming Industries will hold its fifth annual meeting at the Ridge-wood Motor Hotel, Beaumont, Tex., Nov. 6 and 7.

This group is composed of top management personnel, public relations personnel and personnel managers from pulp, paper, and pulpwood consuming industries in Texas, Louisiana, Mississippi and Arkansas.

Robert Sturgiss, Southwest public relations manager of the Ford Motor Co., Dallas, and Walter G. Beach, supervisor of publications and public information for the Humble Oil and Refining Co., will speak on community relations problems. A panel discussion is planned. Banquet speaker will be Dr. R. H. Montgomery, graduate professor of economics, Univ. of Texas.

E. T. CUDDEBACK was appointed mgr., gen. products div. sales, southeast region, for Allis-Chalmers Mfg. Co., Milwaukee. . . . BENNETT W. BURNS, partner of H. E. Bovay, Jr., consulting engineers, becomes managing partner in Houston, Tex. S. J. BELL, assoc., takes up Mr. Burns' former duties as chief engineer, Houston. GUY FURGIUELE, assoc., becomes asst. chief engineer, Houston. L. S. CURTIS is now assoc. and asst. to Mr. Bovay.

### "Mac" May Goes to Gulf States

New technical director of Gulf States Paper Corp., Tuscaloosa, Ala., a newly created position, is DR. MALCOLM MAY, who for the past several years has been head of the pulping section at The Institute of Paper Chemistry, Appleton, Wis. Prior to joining the Institute staff he was technical director at Champion Paper & Fibre Co., Houston, Tex. He obtained his degrees at Rice Institute in Texas and at the Appleton institution.

### Midwest Memo from DGC

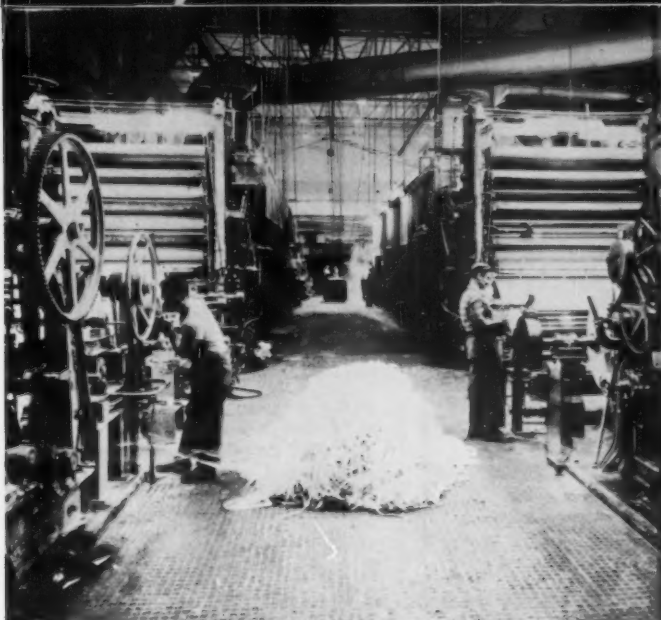
Champion Paper and Fibre Co. announces appointment of AUSTIN F. ANTHIS as project engineer in the research and development division in Hamilton, O. He has been senior technologist at the Texas division. Champion also announces creation of the new position of technical director, customer services, and the appointment of RONALD I. DRAKE to this post. He joined Champion in 1936 as a field service representative, is a graduate of the University of Wisconsin. . . .

CHARLES A. KING has joined Paper Converting Machine Co., Green Bay, Wis., as a sales engineer according to R. E. SMALL, vice pres. for sales. . . .

GUY MCCORISON, vice pres., Thilmay Pulp & Paper Co., Kaukauna, Wis., was awarded the Silver Beaver Award, highest award for adult leadership in scouting. . . . JOHN S. PILLSBURY, JR., pres. of Northwestern National Life Insurance Co., was named a director of Minnesota & Ontario Paper Co. . . . DWIGHT E. ZELER joins the Chicago sales office of American Cyanamid Co.'s pigments div. He is a graduate of Purdue U. and has been with Cyanamid since 1946. . . . J. H. WILLIAMS became asst. to the sales mgr. of the Bantam Bearings div., Torrington Co., in South Bend, Ind. . . .

MARTIN BOLDOC was appointed paper mill supt., Hennepin Paper Co., Little Falls, Minn. He was paper machine supt. at Finch, Pruyn & Co.'s Glens Falls, N.Y.,

# GOULD PAPER COMPANY converts 3 paper machines to *Norgren* MICRO-FOG<sup>®</sup> Lubrication



MICRO-FOG Lubrication for No. 1 and No. 2 machines at Gould Paper Co. has reduced bearing temperatures 10°F to 20°F.

Gould Paper, plagued with excessive down-time due to unsatisfactory lubricating methods, investigated all available centralized lubrication systems. As a result, early in 1957, they converted 368 bearings on three paper machines to Norgren Micro-Fog lubrication.

Micro-Fog has reduced bearing temperatures as much as 50° F. Average operating temperature of 85 half-plain bearings has dropped from 189° F to 139°F.

Micro-Fog has cut oil consumption more than 66%. In addition, the cost of hand oiling and block grease replacement has been eliminated. Also eliminated are the extra maintenance, lost production and fire hazard caused by the dripping of lubricant.

**For all the details —**

**WRITE FOR FREE BULLETIN: MF-26**

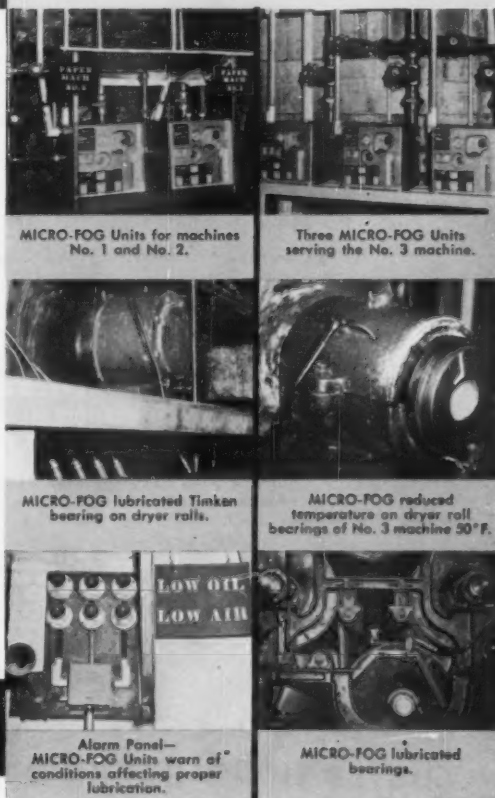
*If it's Norgren... It's Dependable.*

## C. A. NORGREN CO.

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### Norgren MICRO-FOG<sup>®</sup> Gives Gould These Benefits:

- Bearing temperatures reduced as much as 50°F
- Frequent bearing failures ended
- Hand oiling eliminated
- Excessive lubrication maintenance ended
- Lubricant consumption greatly reduced
- Fire hazard removed
- Perfect lubrication for all bearings
- Lubrication continuous and automatic
- Product contamination eliminated



MICRO-FOG Units for machines No. 1 and No. 2.

Three MICRO-FOG Units serving the No. 3 machine.

MICRO-FOG lubricated Timken bearing on dryer rolls.

MICRO-FOG reduced temperature on dryer roll bearings of No. 3 machine 50°F.

Alarm Panel—MICRO-FOG Units warn of conditions affecting proper lubrication.

MICRO-FOG lubricated bearings.



# Strictly Personal

mill for many years and recently resigned as gen. mill supt. of the Manistique Pulp & Paper Co., Manistique, Mich. . . . WILLIAM BECKETT, Ohio state senator and pres. of Beckett Paper Co., Hamilton, O., was elected a director of The Crystal Tissue Co., Middletown., replacing the late HENRY J. BRANDT of Chicago. Bill Beckett served two terms as mayor of Hamilton and was first elected to the Ohio Senate in Nov., 1956. . . .

MELVIN W. SNOVER, Williamson Adhesives, Inc., Skokie, Ill., is the new chairman of Chicago section of TAPPI. . . .

JAMES R. LYONS, Alton Box Board Co., heads up the newly formed St. Louis TAPPI district, of which ED GILLAN of Union Starch was one of the principal founders. For the Chicago section, first, second and third vice chairmen, in order, are: HENRY KLAUKE, Container Corp., CARL HELM, American Cyanamid, and GEORGE ALDERSON, Rockwell F. Clancy Co. . . . MELVIN MEYER, Container Corp. is secy., and WILLIAM KENNERY, Ace Carton, treas. . . . In the St. Louis district, there is one vice chairman, WILLIAM J. RICE, Central States Paper, while

HENRY SEIBEL, Gaylord Container, is secy., and MICHAEL MORIARTY, ACF Industries, treas. . . .



**John Lazar Promoted at Rhinelander Paper Co.**

. . . to the position of production mgr. responsible for pulping, papermaking and converting production facilities as well as material handling operations. A native of Milwaukee, Mr. Lazar graduated from Northwestern U. in 1948 and joined Ripco after working for Scott Paper Co., Pabst Brewing Co. and Boeing Aircraft Corp.

Valley Iron Works Co., Appleton, Wis., has reorganized executive personnel: R. A. PETERSON continues as pres. and gen. mgr. Other assignments are: W. A. HOMES, asst. gen. mgr.; TALBOT PETERSON, secy.; WILLARD C. NOTBOHM, asst. exec. vice pres.; GREGORY A. SCHULTE, treas.; PAUL BOHONOW, vice pres. of pulp & paper mill equipment sales; W. K. KOLB, vice pres. i/c industrial sales; GEORGE E. REYNOLDS, chief engineer; CARL G. MALMBERG, works mgr.; and HELM C. HUSSNER, gen. supt. RICHARD



Lausman . . . . . Holt

## In New Posts for Consolidated

HAROLD J. LAUSMAN has been appointed asst. manager, Appleton, Wis., Division, Consolidated Water Power & Paper Co., announces L. E. SMITH, Appleton Division manager. Mr. Lausman, a graduate of Lawrence College with a b.a. degree in chemistry, has been with Consolidated since 1939 except three years in military service. He has been pulp and by-products sales rep. since 1953.

DR. SHERWOOD G. HOLT has joined Consolidated as manager of the Development Dept. announces G. K. Dickerman, director of corporate planning and development. Mr. Holt will manage the company's research and development program. He has been with Scott Paper Co. as chief research engineer in charge of papermaking research; was formerly with du Pont as research engineer.

## CUSTOM FABRICATIONS



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U. TEMPLE, RAYMOND A. BENNETT, HAROLD A. NORSEEN and WILLIAM S. MOUNTS are to be district sls. mgrs. . . .

JOHN BUNN JR., was appointed to the new position of training director in the dept. of industrial relations at Rhineland Paper Co., Rhineland, Wis. A graduate of Purdue U., he was former conference and program leader at General Motors Institute. . . .

#### Paul A. Smith of Blandin, Dies

Veteran consultant and longtime supt. of Blandin Paper Co., Mr. Smith died Oct. 10. One of his sons—Les Smith, St. Regis.

#### Nylund Retires After 34 Years in Territory; Hazekamp Succeeds

JOHN J. NYLUND, who has toured the Wisconsin, Minnesota, Illinois and Upper Michigan mills for 34 years, officially retired as of Oct. 1 as General Dyestuff representative. This is a record very few sales reps. could match.

Part of that time he also called on Kalamazoo mills. He operated out of Chicago offices. His home is in Wilmette, Ill. He and his wife, Margery, are planning a trip to Finland. He was born in Kupio, Finland, and was manager of mills in Europe before coming to the U.S.

EARL HAZEKAMP is Mr. Nylund's successor. He also has had long service with General Dyestuff. He spent 28 years in the laboratory in Chicago.



R. C. Doane . . . . . P. F. Watzek

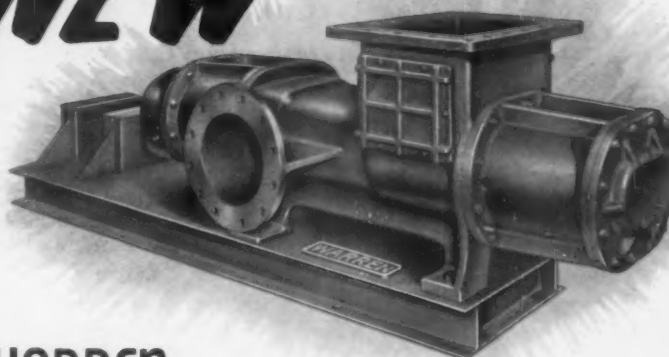
#### Elected to Institute Board

RICHARD C. DOANE, president of the International Paper Co., New York City, and PETER F. WATZKE, president of The Crossett Co. and Crossett Paper Mills, Crossett, Ark. are new trustees of The Institute of Paper Chemistry elected at the recent annual meeting of the membership in Appleton, Wis. Both will serve for terms expiring in 1963. They replace George E. Dyke, vice chairman of the board of Continental Can Co. and Thomas B. McCabe, president of Scott Paper Co. who were not eligible to succeed themselves.

Re-elected for the coming year as nominee of Lawrence College was KARL E. STANSBURY, chairman of Thilmany Pulp and Pauer Co. Senior trustees re-elected who will serve until 1964 were DAVID L. LUKE, president, West Virginia Pulp and Paper Co.; W. IRVING OSBORNE, JR., chairman of Cornell Paperboard Products Co., and JOHN L. RIEGEL, president, Riegel Paper Corp. Mr. Osborne is chairman and Mr. Luke vice chairman of the Institute board.

Here it is . . . the

# NEW



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\*11 HIGH DENSITY SCREW PUMP FOR CAPACITIES UP TO 750 TONS PER DAY

### High Density Screw Pump\*

that costs less than any other method of moving high density stock

Take lower initial cost . . . and add to this the fact of proven production economies. Then you'll see why the paper and pulp industry is hailing this Warren Pumps exclusive as one of the soundest, most economical developments in years.

Here are some of the things this new high density screw pump will do:

- PUMP capacities to 750 TONS PER DAY (depending on density)
- PUMP WATER as well as HIGH density stocks
- DELIVER pressures to 300 PSIG
- HANDLE densities to 18% AND HIGHER
- ELIMINATE need for auxiliary feeding
- PUMP stock with NEGLIGIBLE WORKING
- DELIVER stock WITHOUT PULSATION
- AVOID the DIRT and MAINTENANCE of other methods
- PERMIT DIRECT DRIVE or V-BELT DRIVE
- SAVE BUILDING COSTS by installing deckers on ground floors

This is no drawing board dream. These pumps have undergone the most severe field tests for nearly two years . . . and results are unquestioned!

\*Patent pending

Tell us about your own high density stock pumping problems. Or simply write for more complete information . . . now!



PP-42



### WARREN PUMPS, INC.

WARREN, MASSACHUSETTS

# Strictly Personal

## Heads Dow Plastics Sales

Appointment of G. J. WILLIAMS to succeed DONALD L. GIBB as sales manager of The Dow Chemical Co.'s plastics department is announced by Donald K. Ballman, director of sales. Mr. Williams has been assistant to Mr. Gibb since 1956.

Mr. Gibb will continue his association with the company's sales department, assuming new duties as a special consultant.

## Canada

### Memo from CLS

R. L. (BOB) BONAPARTE has joined Powell River Sales Co. as marketing manager, his responsibilities including all phases of newsprint and other forest products sales. A graduate of Columbia University, he formerly was with the management consultant firm of McKinsey &

Co. in San Francisco and served several years as New York sales manager for U.S. Plywood Corp.

BORJE WAHLSTROM, who has spent the past couple of years in Quebec with Anglo Paper Products and Anglo-Newfoundland Development Co., Grand Falls, Newfoundland, has returned to Sweden to become control and development supt. of a kraft paper mill at Korsnas. . . . KEITH LACHANCE, asst. mill mgr., of the board mill, the E. B. Eddy Co., Hull, Que., has been elected pres. of the Ottawa Club of Printing House Craftsmen. . . . JOHN G. PRENTICE, pres. of Canadian Forest Products, Vancouver, B.C., has been chosen vice pres. of the International Chess Federation at its recent congress in Dubrovnik, Yugoslavia. . . .

FRED CAMPLING, who went to Spruce Falls Power & Paper Co. as a student in 1951, has been appointed chief industrial engineer there, succeeding BOB MASKEL, who has gone to Neenah, Wis., to become supt. of consumer customer acceptance laboratories, Kimberly-Clark Corp., joint owner with the New York Times of the Spruce Falls company. RUSS TULLY has taken over Mr. Campling's former job as construction engineer. . . .

MORT HEAPS, engineer at Ocean Falls, B.C., for Crown Zellerbach Canada, has

## produce more uniform chips . . . reduce downtime and waste with WAPAKONETA Hi-Production CHIPPER KNIVES

Wood room costs go down —when you install Wapakoneta HI-PRODUCTION Chipper Knives. Production is more uniform with fewer splinters and oversize chips . . . less dust. Knife edges stay sharp longer without reconditioning.

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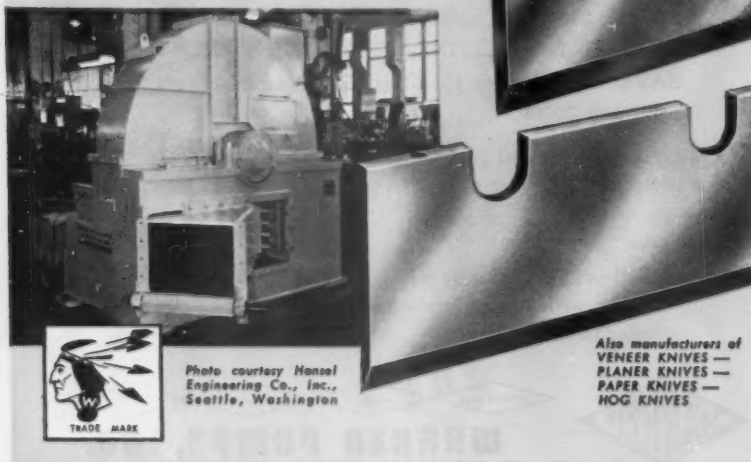


Photo courtesy Honsel Engineering Co., Inc., Seattle, Washington

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VENNER KNIVES —  
PLANER KNIVES —  
PAPER KNIVES —  
HOG KNIVES



## Jim Lane, Retired at Baie Comeau, Indulges in Some Favorite Reading

GEORGE JAMES LANE, manager of Quebec North Shore Paper Co. operations at Baie Comeau, Que., since the mill was built by the Chicago Tribune, in 1937, and previously a top engineer and manager for International Paper Co. in U.S. and Canada, has retired, but will continue to serve as consultant. CHARLES NEWMAN moves up from gen. supt. to manager. He in turn is succeeded as gen. supt. by ALEC HAMILTON, who moved recently from the Tribune's Thorold mill to Baie Comeau.

During Mr. Lane's career as Baie Comeau manager, this mill's twin 262-in. wire machines long held world speed records for newsprint, the first machines to average over 1650 fpm for a month's run.

Mr. Lane was born in Kansas City, Mo., graduated in engineering from Univ. of Illinois and started his career as an engineer on I.P. mill construction in the South. In the '30s he managed the now defunct Pyrites, N.Y., mill for I.P., which made newsprint for the N.Y. World. He was manager at the C.I.P. Gatineau, Que., mill prior to going to Baie Comeau.





#### Hal Cunningham Retires

... as vice president and manager, Paper Division, Dominion Engineering Co., Lachine, Que. He is succeeded by DON LEWIS. Mr. Cunningham had many years in the paper machine building field and under his direction, Dominion's work in this field greatly expanded. Dominion has made machines for mills abroad as well as in the Dominion.

been transferred to CZ's sawmill div. as design engineer. He has been succeeded at the pulp mill by D. A. CHARLESON as plant engineer. Res. mgr. ROY FERGUSON also announces appointment of R. A. JEMSON as asst. plant engineer, with R. A. ROLLINS steam plant supt. and A. J. TIEMENS asst. steam plant engineer. ...

THOMAS G. SHEPPERD is the new gen. supt. of the pulp and paper div., Donnacona Paper Co., Quebec City. He joined Donnacona in 1949 after a year with Provincial Paper Co. in Port Arthur, Ont., serving successively as junior chemist, chief chemist, groundwood supt. and production supt. ...

L. A. PALMER, vice pres. and gen. mgr., Donnacona Paper Co., announces that PALMA LEBORGNE has been appointed asst. paper mill supt. of Donnacona, a subsidiary of Howard Smith Paper Mills. ...

ARTHUR F. TEW has retired as pulpmill supt. for Dryden Paper Co., Dryden, Ont., after 38 years with the company, and has been succeeded by W. E. HAVILAND, who has been with Dryden since joining the control dept. after graduating from McGill. ... W. BUSH has been named pulp supt. after spending some time with Gaspesia Sulphite Co. and Anglo-Canadian Pulp & Paper Mills in Quebec. He is also a McGill graduate. ... A. B. HEMMINGSEN, who has represented British Columbia newsprint companies in the Orient for many years, was a recent visitor to Vancouver where he met executives of Powell River Co., MacMillan & Bloedel, Crown Zellerbach Canada and other companies. ...

JAMES PETRIE, mgr., pulp and newsprint div., MacMillan & Bloedel at Port Alberni, has returned from a two months tour overseas. He spent a month driving in his native Scotland. ...

J. G. MORRISON becomes asst. mgr., mfg.—pulp and board at Abitibi Power & Paper Co., Ltd.'s executive offices in

Toronto. T. C. ANDERSON succeeds Mr. Morrison as mill mgr., Fort William div.

#### Too Many Generals

The listing of senior qualified personnel required by Sandwell International Ltd. to staff its overseas mills (on page 7 of the World Review Number) incorrectly listed "general superintendents" twice. The correct listing should have been: Mill managers, departmental superintendents, general superintendents, master mechanics, chief electricians, paper-makers, and groundwood operators.

Sandwell International designs and supervises construction of pulp and paper mills in various parts of the world.

## Pacific

### Memo from LHB

JAMES D. MORAN is new assistant vice pres. of The Flinkote Co., serving as line assistant to Wilson Harvey, vice pres. and general manager of Flintkote's Pioneer (West Coast) Division with headquarters in Los Angeles, Mr. Moran in charge of legal functions, as well public and industrial relations and advertising.

GORDON PETRIE, of Black-Clawson Co., succeeds JOHN L. AYERS, of DuPont, as pres. of International Brotherhood of Migratory Peddlers at Portland, Ore.; also elected were vice pres. HUGH C. OSBORN,



**FOR MAXIMUM TINCTORIAL STRENGTH, SOLUBILITY AND BRILLIANCE OF SHADE** on unbleached pulps at lower costs per ton than can be obtained with any other class of dyes, CIBA offers a full line of "Paper-Proved" basic dyes that dependably and economically meet all specifications. Among these are ...

**Methyl Violet P-4BX Ex. Conc.**  
**Bismark Brown P-R Ex. Conc.**  
**Malachite Green P. Crystals**  
**Rhodamine P-B Extra**



Your inquiries are invited on CIBA "Paper-Proved" technical information, samples and color matching.

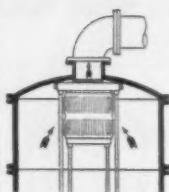
**CIBA Company, Inc., Paper Chemicals Department**  
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3 Ways with

## Centrifix

### 1 INTERNAL PURIFIER



Ends "Black  
Liquor" Loss

Clean vapor means  
clean condensate  
usable in other parts  
of the process.

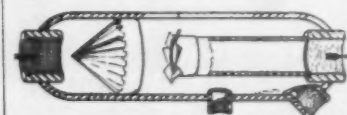
### 2 SCRUBBER



Removes Dust  
and Fumes in  
Reclamation Plant

Guaranteed to remove  
99.5% or more of ALL  
solid or liquid entrain-  
ment regardless of size;  
no moving parts, no  
maintenance; minimum  
pressure drop.

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sure steam; increased heat trans-  
fer speeds production.

• Keeps compressed air lines  
clean and free of oil and water;  
eliminates paper spoilage. A.A. 8002

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## PULP & PAPER

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Lockport Felt, secy. T. M. JAMES JR.,  
Flox Co., treas. DOUGLAS B. ARMSTRONG,  
R. T. Vanderbilt Co. . . .

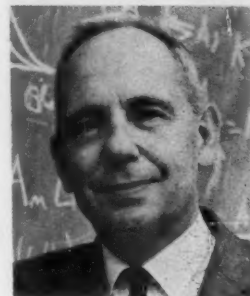
ROBERT C. NITE, multiwall leadman  
at CZ Port Townsend, advances to asst.  
to multiwall & grocery bag supt. . . . DEL-  
BERT M. BUSH promoted to asst. multi-  
wall & grocery bag supt. at CZ Port Town-  
end. . . . DONALD J. CARTIER, finishing  
room shift foreman at CZ Camas since  
1953, has succeeded CECIL KNAPP as fin-  
ishing room supt., who retired. . . .

ROBERT W. STEVENS, in addition to his  
consulting engineering work, has estab-  
lished Stevens Mill Supply, a new or-  
ganization at Port Hueneme, Calif. The  
firm, of which he is pres., represents Phil-  
adelphia Felt, Appleton Machine, Hay-  
den Wire and Layton-Greenfield. . . .

THOMAS H. MUTCHLER, for 6 yrs. with  
Weyerhaeuser Timber Co., Tacoma, as  
public information representative and edi-  
tor of employe publications, joins Interna-  
tional Paper Co. at Longview (Wash.) as  
public relations mgr. for West Coast op-  
erations of Long-Bell div. . . .

ROBERT ALLAN has been promoted to  
master mechanic at CZ's Port Townsend  
mill and CHARLES F. WILLARD succeeds  
him as asst. master mechanic. . . . ALBERT  
O. MUENCH, project engr., Crown Z  
Camas, recently completed a one-week  
course on the supervision of engineers at  
the Calif. Inst. of Tech., Pasadena. . . .

Recently vacationing in Hawaii: W. H.  
RICHARDS, Western mgr. Container Corp.  
and wife from Santa Clara; Ed BARTH-  
ELEM, paper mill supt.-tissue at CZ



### Prof. Eyring Conducts Seminars In Appleton and on West Coast

"Some Recent Researches on Cellulose  
and Some Fundamental Principles of  
Physical Chemistry" was the subject of a  
recent Lake States TAPPI seminar in  
Appleton, Wis. and a Pacific Section  
Seminar in Portland Ore., and Camas,  
Wash., conducted by Prof. Henry Eyring,  
dean of the Graduate School, the Univer-  
sity of Utah and authority in the field of  
reaction kinetics. Prof. Eyring presented  
concepts of some of the fundamental prin-  
ciples of physical chemistry and skill-  
fully developed them to the point where  
they could be used to obtain an under-  
standing of the mechanisms and conse-  
quences of such fiber characteristics as  
swelling and elongation while under ten-  
sion. The approach throughout was based  
on application of the basic principles to  
pictorial development of theories.

Camas, & Mrs. B.; JOHN H. DRAPER JR.,  
pres. of Draper Bros Co. All went by  
boat except the Barthelmays who are in  
boat business at home—they flew. . . .

ANDREW S. HALLEY, vice pres. for  
finance of Fibreboard Paper Products, was  
elected a director. . . . ARTHUR F. WEL-  
HER, 48, maintenance supt. Weyerhaeuser  
Pulp Div. at Springfield, died suddenly of  
heart attack Sept. 18 while bowling. . . .

CHARLES W. CRIST JR., community re-  
lations mgr. of West Coast Div. Scott  
Paper Co., becomes chairman of North-  
west Pulp & Paper Assn.'s public relations  
committee, succeeding W. R. RICHARD-  
SON, mgr. Pac. Northwest public re-  
lations, Crown Z Corp. . . .

RAYMOND L. HOWERTON, Hyster Co.,  
becomes senior director of Oregon chapter  
of National Industrial Advertisers Assn.  
and MEL CARPENTER, Georgia-Pacific  
Corp., junior director. . . . In newly  
formed Weyerhaeuser Timber Co.'s Sil-  
vatek and Special Products Group, vice  
pres. JOHN L. ARAM is gen. mgr.; ROBERT  
D. PAULEY is director of business  
development and asst. to Mr. Aram; Dr.  
A. S. GREGORY mgr. of central research  
& development, E. M. WILLISTON mgr.  
of wood products group development &  
research. . . .

SID MOORE, head of S. S. Moore &  
Associates, manufacturers' agent in Port-  
land, Ore., announces increasing the or-



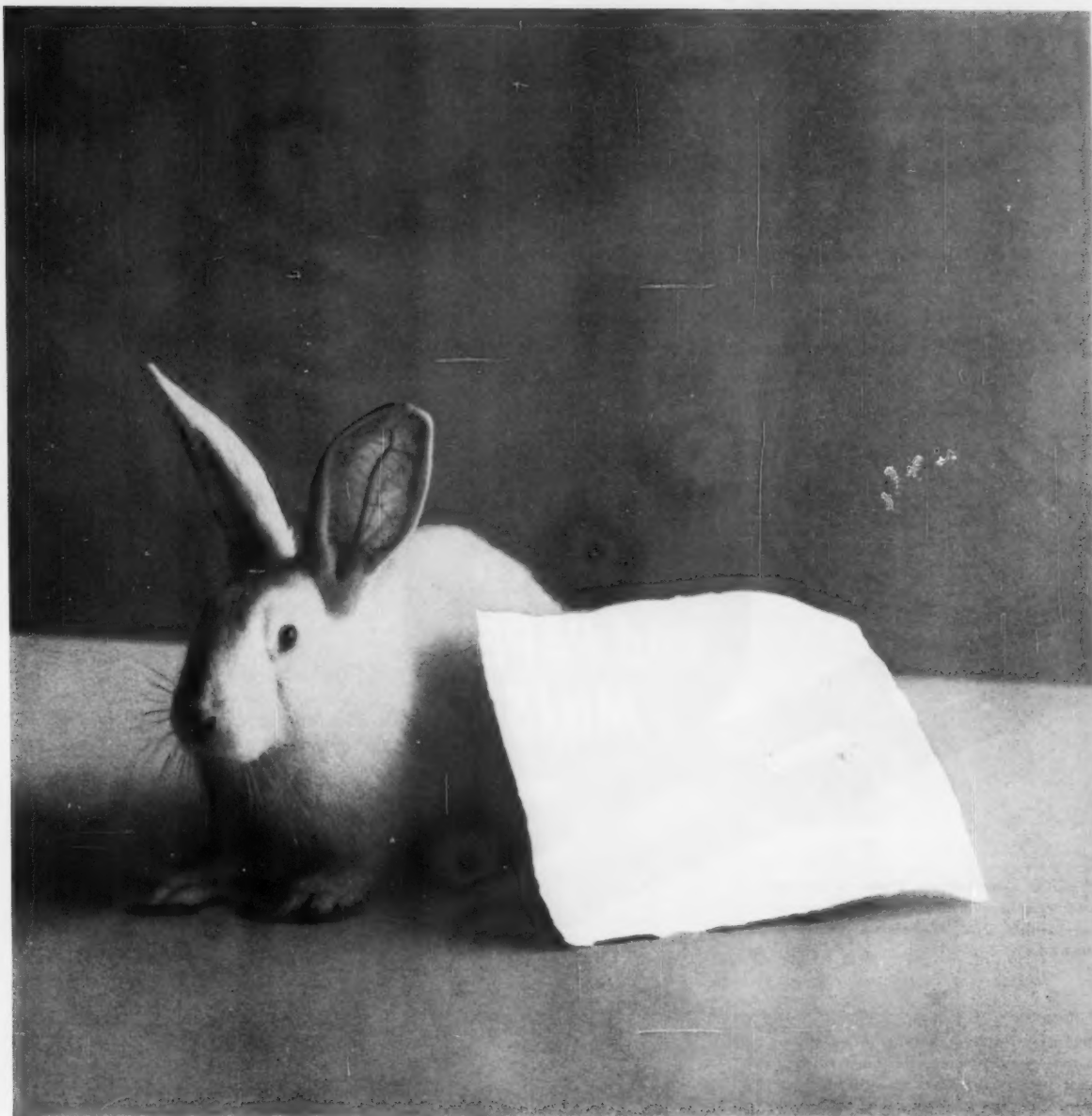
Coney . . . . . Paul



### New Positions in Crown Z

D. S. CONEY, formerly director of mgt.  
development for Crown Z, promoted to  
newly created position of asst. vice  
pres. for industrial relations. He is re-  
sponsible for company labor relations,  
personnel administration, employe re-  
lations, safety programs, employe benefits,  
and retirement plans in U. S., including  
Gaylord & Western-Waxide divs., and  
has advisory responsibility for these in  
CZ Canada.

E. A. PAUL, director of industrial re-  
lations for CZ, assumes broader respon-  
sibilities under Mr. Coney in new  
corporate-wide industrial relations or-  
ganization.



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You get the whiteness. And you get extra-high folding and tensile strength. You get formation and printability usually associated only with low-strength pulps. Uniquely, Hi-Brite develops these good characteristics whether your product calls for light or extensive refining. And you can be sure of an on the continent supply of Hi-Brite, thanks to over 400-tons-daily output.

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## PULP & PAPER

## Strictly Personal

ganization's line of products. The firm is now Northwest representative for Carboline Co., National Air Vibrator Co., Pennsylvania Pump & Compressor Co. and Vibra Screw Co. . . .

ED JENKS, former mgr. of Western Gear Corp.'s Dallas, Tex., office, becomes marketing mgr. of the firm's industrial products div. which is now headquartered at the Belmont plant.

BILL VAN HORN, sls. mgr. for Horace

T. Potts Co., making his first swing around the Oregon territory, visited Electric Steel Foundry, Portland, Ore., recently. With him was West Coast rep WIS MORRIS. Other visitors were WALT WARREN, northwest rep for the Ladish Co.; VERN BARBER and JACK POWELL, both from Hills-McCanna; HOWARD HARMAN of Pacific Valves; and W. W. (BRO) ADAMS, western regional mgr. for Rigidized Metals.



Bacon ..... McClary

### Appointments at Simpson

C. Henry Bacon Jr., vice pres.-gen. mgr. of Simpson Logging Co. for past 5 yrs., is appointed exec. vice pres., of Simpson Timber Co., Seattle, Wash. In this newly created position he has responsibilities for parent organization's over-all sales and operational functions of divisions in Pac. Coast states. Harold W. McClary was promoted to vice pres.-gen. mgr. of Simpson Logging at Shelton.

### Pulpwood Personals

ROBERT G. (GERRY) MCKEE is British Columbia's new deputy minister of lands and forests, succeeding CHAUNCEY D. ORCHARD, who had held the position for more than a decade. Born 58 years ago in Armstrong, B.C., Mr. McKee has devoted his entire career to the B.C. Forest Service which he entered in 1921 after graduating from the University of B.C. For the past four years he had been asst. chief forester i/c operations. . . .

B. FRANK HEINTZLEMAN of Juneau, Alaska, received the Sir Williams Schlich memorial medal for distinguished service to forestry at the annual meeting of the Society of American Foresters in Salt Lake City on Oct. 1. Governor of Alaska from 1953 to 1956, Mr. Heintzleman was regional forester in Alaska for the U. S. Forest Service for 16 years. A second award, for outstanding achievement in biological research contributing to the advancement of forestry, went to NICHOLAS T. MIROV of the California Forest and Range Experiment Station at Berkeley. . . .



Webster Combination Chain is strong and durable—widely used where a serviceable and economical chain is desired.

Pins may be riveted type or provided with cotters. Pins are designed to prevent turning in side bars—distributing wear over full surface of pin inside the long barrel of the link.

Rugged steel side bars.

Smoothly cored holes assure close fit over pins. Special pattern equipment and tools assure accuracy of pitch and

reduce clearances between all wearing surfaces to a minimum.

Cast links are made of highest grade malleable iron or Durametal which provides 20% greater strength. Available in plain as well as many styles of attachment links to suit your specific requirements.

All Webster Chains are designed, cast, machined and tested in our Tiffin, Ohio, plant.

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DEPT. PP-118, TIFFIN, OHIO

**BULK MATERIALS HANDLING EQUIPMENT**

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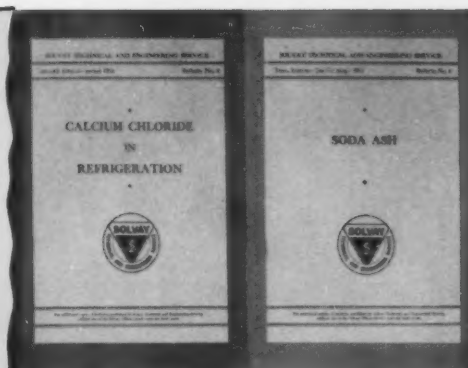
### WANTED—TRAINED EDITORIAL MAN

for position on PULP & PAPER. Required: some desk editing and copy preparation experience. Ability to select news of interest; to write or rewrite news. Knowledge of pulp and paper processes, machinery, etc.

If interested, reply to PULP & PAPER, 1791 Howard Street, Chicago 26, Ill. Send recent photo if possible and resume of career.

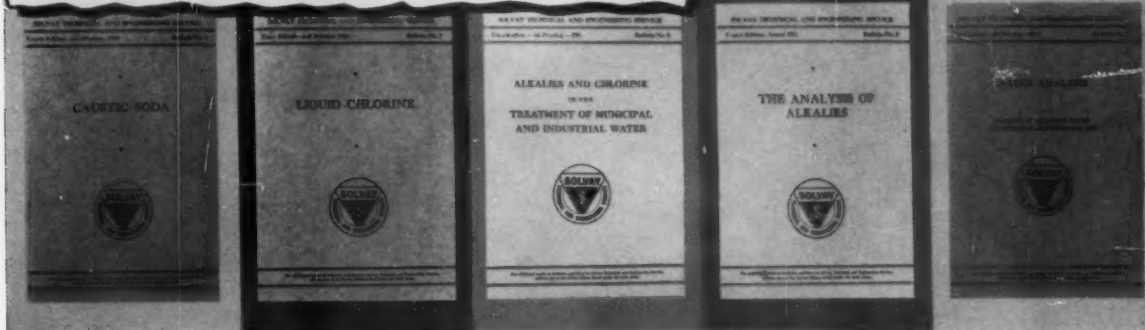
## TO HELP YOU IN YOUR CURRENT OPERATIONS— SOLVAY TECHNICAL BULLETINS

Authoritative information on Soda Ash, Caustic Soda, Calcium Chloride, Bleaching, Water Treatment and Refrigeration Brine. These bulletins include properties, use, storage, handling, testing, analytical procedures and other data from accepted sources, from SOLVAY's own research and from our vast store of field experience accumulated during the past 75 years. Check contents of individual bulletins and fill in coupon below.



**No. 4—Calcium Chloride in Refrigeration:** 64 Pages—Properties of Calcium Chloride Brines; Preparation and Maintenance of Calcium Chloride Brines; Industrial Applications of Calcium Chloride Refrigerating Brines.

**No. 5—Soda Ash:** 64 Pages—Properties; Handling and Unloading of Bulk Shipments, Bags and Barrels; Storage; Weighing, Proportioning and Feeding Devices; Sampling and Analysis; Precautions; Conversion Tables.



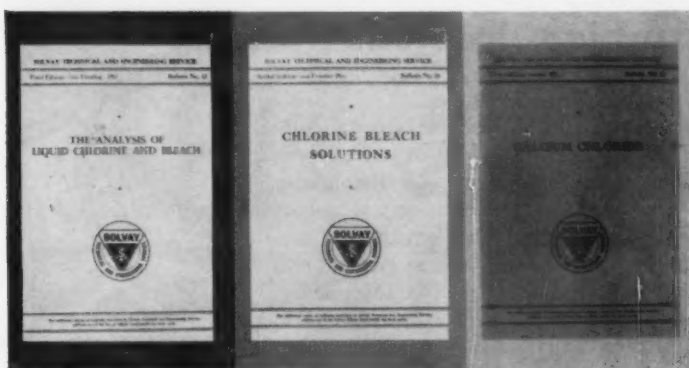
**No. 6—Caustic Soda:** 24 Pages—Properties of Caustic Soda and Its Solutions; Handling and Dissolving; Nature and Advantages of Liquid Caustic Soda; Unloading and Handling Liquid Caustic Soda; Conversion Tables.

**No. 7—Liquid Chlorine:** 60 Pages—Properties; Containers; Safe Handling; Equipment and Accessories; Accident Procedure.

**No. 8—Alkalies and Chlorine in the Treatment of Municipal and Industrial Water:** 92 Pages—Natural Water and Its Impurities; Water Softening and Its Advantages; Softening Processes; Municipal and Industrial Water Purification; Chemical Feeding Equipment, etc.

**No. 9—The Analysis of Alkalies:** 80 Pages—Procedure for the Analysis of Nine Major Alkalies; Methods; Reagents, Indicators, Standard Solutions Used; Atomic Weights—1952; Temperature Conversion.

**No. 11—Water Analysis:** 100 Pages—Mineral Analysis of Water; Stationary Boiler Water Analysis; Municipal Water Supplies; Railroad Water Supplies; Swimming Pool Waters; Polluted Waters; Reagents, Indicators and Standard Solutions; Conversion Tables.



**No. 12—The Analysis of Liquid Chlorine and Bleach:** 72 Pages—Liquid Chlorine; Sodium Hypochlorite; Calcium Hypochlorite; Reagents, Indicators, Standard Solutions.

**No. 14—Chlorine Bleach Solutions:** 68 Pages—General Properties of Hypochlorous Acid and Its Salts; Types of Industrially Important Bleach Liquors; Equipment; Operation, etc.

**No. 16—Calcium Chloride:** 92 Pages—Properties of Calcium Chloride and Its Solutions; Unloading and Handling Calcium Chloride in Solid Forms and Liquid; Conversion Tables.

Sodium Nitrite • Caustic Soda • Calcium Chloride • Caustic Potash  
Chlorine • Potassium Carbonate • Sodium Bicarbonate • Chloroform  
Vinyl Chloride • Methyl Chloride • Ammonium Chloride • Methylene  
Chloride • Cleaning Compounds • Hydrogen Peroxide • Aluminum Chloride  
Ammonium Bicarbonate • Carbon Tetrachloride • Snowflake® Crystals  
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BG-11

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## Crane diaphragm valves solve maintenance problem in bleach plant

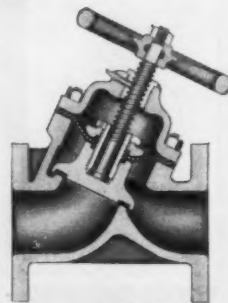
Nine years ago, in this midwest paper mill, a 2-inch Crane iron-body, packless diaphragm valve was installed on a line handling a chlorinated lime solution in the bleach plant. Ever since, this valve has been in daily use without a sign of leakage. It still operates as easily—and seats tightly—as the day it was installed.

Impressed by the operating record of this first valve, the mill has a program for replacing all cocks on this service with Crane diaphragm valves.

Working parts of these Crane valves are

not exposed to corrosive-erosive fluids as in the plug-type and conventional valves. The Crane diaphragm seals the bonnet completely, and functions *only* as a bonnet seal. Sticking and leakage are prevented. Diaphragm life is greatly prolonged since it is not subject to crushing, severe flexing—and early rupture—as in other diaphragm valves.

For complete facts about the complete line of Crane packless diaphragm valves for handling ordinary or corrosive process fluids, ask your Crane Representative.



Crane packless diaphragm valves are made in a wide variety of body materials, including choice of diaphragm, disc insert and optional body lining. Sizes: 1/2 to 14 in.—with screwed or flanged ends.

# CRANE VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill.—Branches and Wholesalers Serving All Areas



## New Type Dozer Blade ... Is Faster, Less Costly

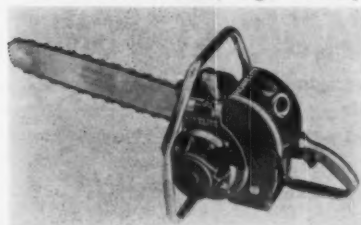


**Applications:** For clearing land.  
**Advantages:** Conventionally equipped dozers are out-performed by dozers using this blade. It puts the equivalent of 12 rooters on tractor moldboards. It is faster, less expensive, and built for rugged terrain.

**Specifications:** The Schnore blade is made of ESCO 12M, a low alloy steel that is hardenable and highly resistant to impact, shock and abrasion. A saw-tooth design and bracing structure behind each tooth assures long performance.

**Supplier:** Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Ore., CApitol 8-2141.

## Direct Drive Chain Saw ... Is Low-Cost, High-Quality



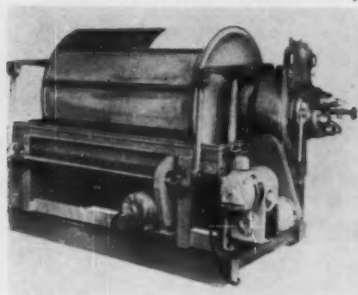
**Applications:** For professional tree maintenance, pulpwood logging.

**Advantages:** New Zip chain saw can cut 18 in. trees in 18 seconds and has enough power to fell trees up to 3 ft. in diameter quickly and easily. It is versatile enough for either part-time cutting or full-time use. It sells for \$169.50, f.o.b. factory complete with 12 in. bar and chain.

**Specifications:** The 18 lb. Zip features short-stroke engine design, all position diaphragm carburetor, automatic clutch and safety chain guard, and large air filter and fuel tank. Blades come in sizes ranging from 12 in. to 21 in.

**Supplier:** Homelite, Port Chester, N.Y., WEStmore 9-3400.

## First Plastic Filter ... Offered Commercially



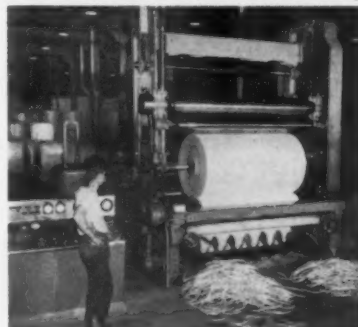
**Applications:** Filtering mildly corrosive materials, particularly where scaling is a problem.

**Advantages:** Plastic rotary drum vacuum filter costs less than rubber-covered or stainless steel units of comparable size and design. Maintenance costs are also lower. Because unit is light weight, structural members cost less and rigging is easier.

**Specifications:** Filter can operate continuously at temperatures as high as 170 F. Components are made of molded plastic with some supporting structural members of resin coated mild steel. The filter tank is also of molded plastic and has polyvinyl chloride feed connections. It is supported by a steel frame and can be easily replaced. Filter cake can be removed by a rubber or synthetic scraper, stainless steel wire or nylon string discharge system.

**Supplier:** Dorr-Oliver Inc., Havemeyer Lane, Stamford, Conn., FIreside 8-7311.

## Rewinder Automatic Control ... Assures Better Roll Density



**Applications:** Slitting and winding stock ranging from envelope to bleached food board and from kraft to cigarette boxboard. Pictured above is the installation at Riegel Paper

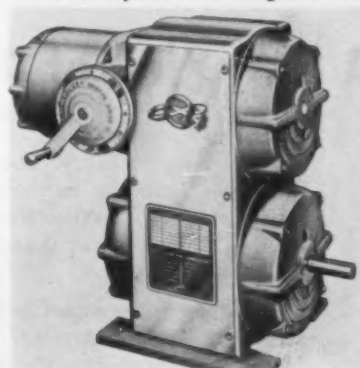
Corp.'s new mill at Acme, N.C.

**Advantages:** Vari-Pitch Sheave drive on the main drums varies speed relationship between the drums to suit paper or board requirements. The rider roll, V-belt driven from front winding drums, is equipped with a clutch to vary torque of rider roll. A hydraulic rider roll control has automatic lifting to vary pressure or rider roll assembly against the rewind roll during roll diameter buildup. The drive features controlled acceleration and deceleration, both regenerative and dynamic braking, thread and job independently adjustable down to 50-100 fpm and preset speed control. With this control, the rheostat can be set for the operating speed and controlled from the "run-fast" and "stop" pushbuttons only.

**Specifications:** It is designed to handle stocks from 25 lb. to 300 lb. basis weight. The backstand is a 92 in., single roll hydraulic shaftless unwind stand built for rolls with a maximum diameter of 72 in. and for speeds of 2,000 fpm with roll weight up to 9,500 lb.

**Supplier:** Samuel M. Langston Co., Camden, N.J., WOodlawn 4-6430.

## Mechanical Speed Drive ... Adjusts over Ranges to 8:1



**Applications:** For use with paper machines and materials handling.

**Advantages:** Basic components of a standard drive can be rearranged in the field to meet changing requirements and minimize stocking. This permits vertical or horizontal mounting of units on floor, wall or ceiling; location of output shaft and motor in any of four positions; and location of speed changing mechanism on top, right or left of motor housing. Internal design distributes belt tension equally between four ball bearings for maxi-



## A New Kind of D-c. Motor With **DYNAMIC RESPONSE**

Here is a motor built to make maximum use of d-c. flexibility. The Super "T" puts Dynamic Response into starts, stops, and speed changes. Dynamic Response gives you a 50% increase in torque and a 50% decrease in reaction time.

This top performance is due to advanced balanced design. Lighter, small diameter armatures cut mechanical inertia 50%. Superior Class B insulation, gives extended life even at temperatures as great as 130°C.

Top grade insulation plus engineered ventilation lets the Super "T" take tremendous overloads. In fact, the Super "T" can develop double normal horsepower during starts, stops, and speed changes.

The Super "T" is a compact power package, designed inside and out for tough industrial service. From appearance to performance, the Reliance Super "T" with Dynamic Response is today's most modern industrial motor.

C-1577



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ENGINEERING CO.

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mum bearing life, and permits rapid belt replacement without removal of shafts or discs.

**Specifications:** The drive operates from an a.c. power source and is available in ratings from 1 to 20 hp with output speeds of 1 to 10,000 rpm. Motor and drive housings are made of cast-iron. Available modifications include remote control, tachometer indicators, special flanges, and a synchronous induction drive motor can replace the squirrel cage motor where more accurate speed regulation is needed.

**Supplier:** Louis Allis Co., Dept. P, 427 E. Stewart St., Milwaukee 1, Wis., HUmboldt 1-6000. Ask for Bulletin 3300.

### Pulpwood Loader

... Is Specially Engineered



**Applications:** Designed for loading and handling pulpwood.

**Advantages:** The mast tilts from the vertical and with maximum lifting height permits loading both sides of rack cars from one side. Counteractive weight distribution and tracking steer wheels provide superior traction in rough surface conditions. Power steering assists maneuverability.

**Specifications:** Truck has lifting capacity of 15,000 lbs., lifting height of 17 ft 3 in. and is equipped with either a Ford OHV V-8 industrial engine or optional Hercules six cylinder engine. Standard transmission is four speeds forward and four speeds reverse Synchromesh transmission.

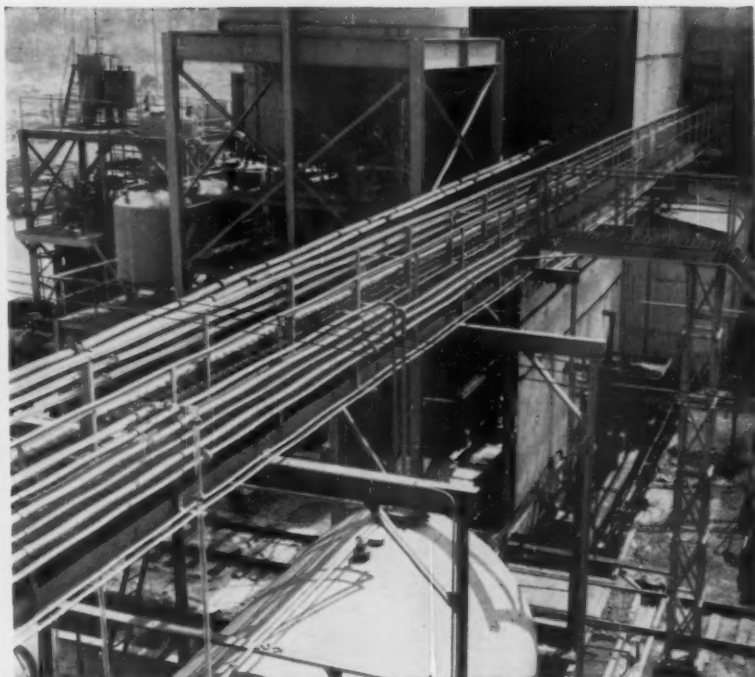
**Supplier:** Gerlinger Carrier Co., Dallas, Ore., or Towmotor Corp., 1226 E. 152nd St., Cleveland, O., GLEnville 1-0900.

### New Model Clutches, Brakes

... Give "Nerve Center" Control

**Applications:** For control of machinery and equipment.

**Advantages:** Working on low power requirements, units may be actuated by micro-switches, photoelectric cells, relays or other electrical means. Operating on 110 volts, 60 cycle alternating current, they will respond



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**Combats Extreme**

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to electrical signals from a remote-control system, ideal for use in automatic programming and cycling.

**Specifications:** Three new models of magnetic friction clutches and brakes, are added to the Dyna-torQ line. A flange-mounted brake, flange-mounted clutch and bearing-mounted clutch are now available with torque capacities of .667 lb.-ft., 5 lb.-ft. or 20 lb.-ft. Brakes in this range have replaceable brake faces and clutches feature stationary-field coils.

**Supplier:** Dynamatic Div., Eaton Mfg. Co., Kenosha, Wis., KENosha 6171.

### Log-Handling Machine ... Solves 3-Way Problem



**Applications:** For unloading log trucks sorting logs, transferring logs to log ponds, loading railroad cars, and other pulpwood log handling.

**Advantages:** Three-wheel machine is faster and more maneuverable than conventional four-wheel machines. Operator's cab is raised eight feet so he can have a better view while placing logs in a railroad car. It not only has forks for lifting logs but also fingers for holding them on the fork and kickers for pushing them off.

**Specifications:** Designed in cooperation with Diamond Lumber Co., Portland, Ore., the machine is powered with a 300 hp Cummings diesel engine with hydraulic drive. Although engineered for a 50,000 lb. load capacity, it can handle 60,000 lbs. if necessary.

**Supplier:** Wagner Tractor Inc., Portland, Ore., AT 7-1186.



**J. H. DUPASQUIER**

560 E. Clarendon St.  
Gladstone, Oregon

## LITERATURE

### Goulds Describes Pumps

Bulletin 721.6 describing its line of single stage double suction centrifugal pumps with horizontally split cases has just been issued by Goulds Pumps, Inc. Fig. 3405 pumps have been available with grease lubricated bearings in 33 sizes with capacities from 200-6400 gpm and heads to 425 feet. Now, this line of pumps, designated Fig. 3406, is available in all sizes with oil lubricated bearings. In addition to the wide range of capacities and pressures, a high degree of standardization and interchangeability of parts distinguishes these pumps. For Bull. 721.6, write without obligation to Goulds Pumps, Inc., 47 Black Brook Road, Seneca Falls, N.Y.

### New Fittings Catalog

A new 86-page master reference volume on stainless steel pipe fittings, announced by Ladish Co., gives detailed information on a broad line of both IPS and Tube OD welding fittings, screwed and socket welding fittings and ASA, MSS and corrosion weight flanges. Technical section includes data on manufacturing standards, specifications, data on welding and corrosion resistance tables. Available by writing to M. S. K. Ladish Co., Cudahy, Wisconsin.

### Ray-Man Conveyor Brochure

Manhattan Rubber Division of Raybestos-Manhattan, Inc., Passaic, N.J., has issued a 12-page brochure covering its new Ray-Man Conveyor Belt. Drawings are effectively used. It is claimed no breaker fabric is required with this belt, which means more cover thickness is utilized. Other advantages claimed are: greater flexibility, more resilience to shock loading, longer life for vulcanized or fastener splices, more rip resistance, and suitable also for 45° idlers. Write for Bulletin M302.

### Increase Paper Production with DUPASQUIER DRIPLESS STEAM SHOWER BOX

- Preheats the Web  
U. S. patent 2,838,982.
- Changes Water Viscosity  
THUS FREEING WET MAT
- Allowing Speed Increase  
Custom Built for Any Machine

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Canada Pat. 1955  
Other pat. pdg.

ALLIS-CHALMERS



## NEW brochure of ideas for modernizing

This booklet is based on the premise that modernization can start anywhere in your plant. It can be a single machine or operation ... a better way of getting variable speed ... a faster way to braze ... or a newly available replacement. In fact, this type of updating is far more common than the sweeping change.

Get a copy of "59 ideas for modernization in '59" from your nearby A-C office or write Allis-Chalmers, Industries Group, Milwaukee 1, Wisconsin.

### Examples of updating!:



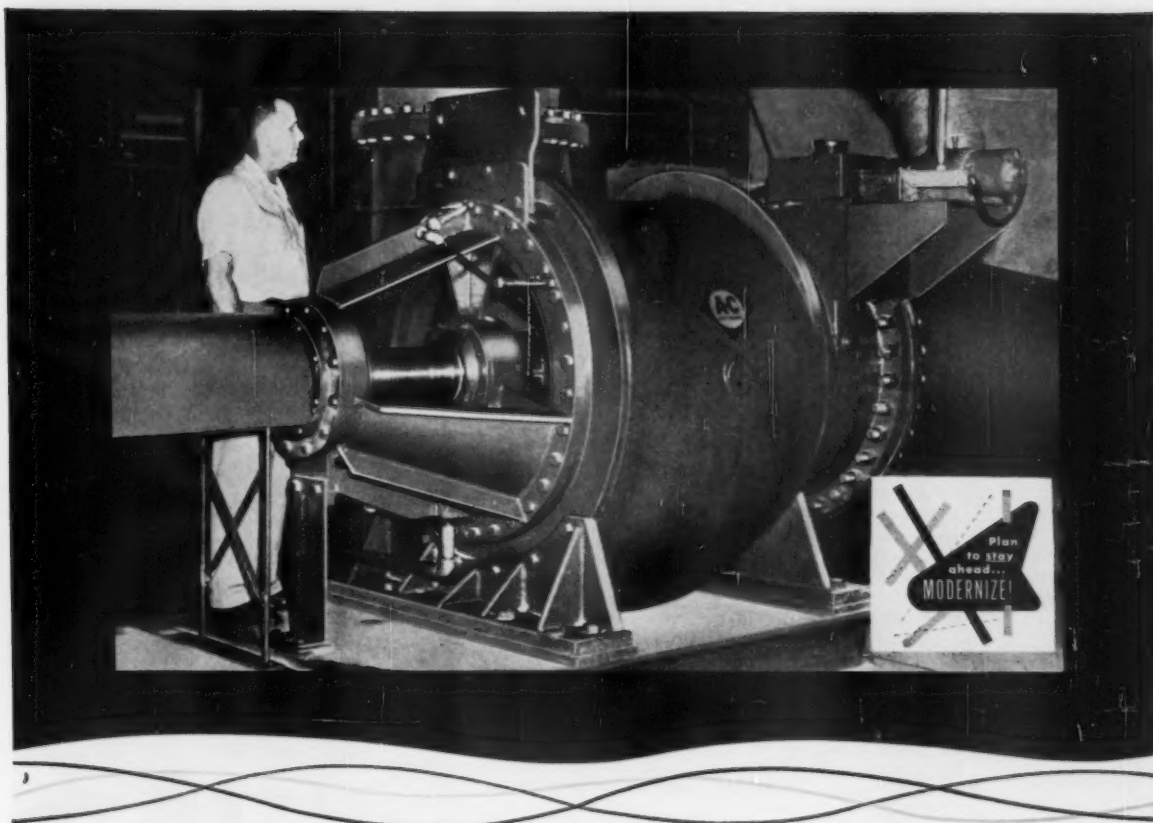
New motor development may eliminate premiums you've been paying for specially protected motors.



Electrical modernization includes placing substations close to machines being served.

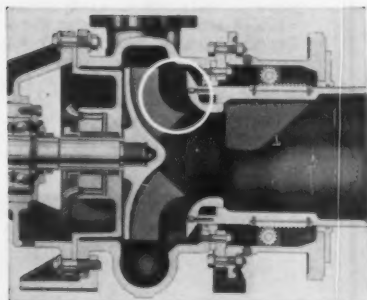
**ALLIS-CHALMERS**





*For fan service . . .*

## **ACAP pumps for better blending than conventional valve control**



**Adjustable cylinder** of ACAP pump may be moved toward or away from impeller for best blending of white water and make-up stock. Fully open position of cylinder, shown by circle, permits maximum blending.

When return white water and make-up stock are mixed by the cylinder of an ACAP pump, the extreme turbulence developed results in a blend that cannot be equalled by valve control.

In addition to superior blending, the ACAP pump also has the following advantages when applied for fan service:

- Saving in power at lower quantities.
- Ease of control: manual, remote pushbutton, or automatic.
- Cleanliness—dirt build-up common in conventional valves with sharp corners is eliminated.
- No addition to total head to compensate for valve loss.

**A complete line** of ACAP pumps is available for fan service. Contact your A-C representative, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

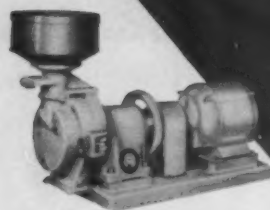
ACAP is an Allis-Chalmers trademark.



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## VERSATILE LABORATORY MILL



Here's a disc mill for your laboratory... to do miscellaneous grinding jobs of either wet or dry material; to refine cooked chips and knotted or screen rejects; to fluff dry pulp samples.

For details and bulletin on the Bauer Laboratory Mill, write us or call FAirfax 3-5501.

**The Bauer Bros. Co.**

HEADQUARTERS FOR PROGRESS

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Springfield, Ohio



### Hal Bogner, for Rader Pneumatics, As Robbins Firm Becomes Rep

Douglas Robbins & Co., Lockport, Ill., has been named sales representatives for Rader high pressure conveying equipment, according to JOSEPH KEYS, president of Rader Pneumatics, Inc., Portland, Ore. Increased demand for pneumatic conveying equipment to handle chips and bulk material has led to opening this office, Mr. Keys said.

HAL BOGNER, a native of Pennsylvania, is president of Douglas Robbins & Co. He graduated from Penn. State in 1936 in mech. Eng. From 1937 to 1945, he was in power engineering in the petroleum field. He was Chicago branch manager of Bingham Pump Co. until 1952 when he joined Robbins & Co. Rader's Lockport office will serve Minn., Wis. Mich., O., Ind., and Ill. Announcement was made in PULP & PAPER, Sept. issue of the formation of Rader Pneumatics Inc. of Tennessee, Memphis, to serve the South.



Karl F. Gothner . . . Richard D. Adams

### New Representative in South

Mr. Gothner, who travels in North and South America for Rosenblad Corp. (U. S. and Canada) and A. B. Rosenblad (Sweden), talks over plans with new rep. for Rosenblad equipment and Källe consistency regulators in the Southern States. Mr. Adams is with Paul A. Chapman and Associates, P.O. Box 888, Decatur, Ga. (phone Drake 7-1741.)



Van de Roovaart . . . Chehak

### Sales Execs for Link-Belt Speeder

N. V. (NORR) CHEHAK has been named sales manager in charge of all domestic and Canadian sales for Link Belt Speeder Corp's line of crawler and rubber-tired shovel-crane and the related diesel pile hammer equipment. D. F. (DAVE) VAN DE ROOVAART assumes the duties of asst. sales manager. Mr. Chehak formed Link-Belt Speeder in 1948. After five years as a district sales representative in the Pacific Northwest and Canada, he was appointed, in 1955, to the post of asst. sales mgr. Mr. Van de Roovaart, has served as asst. sales manager for western U. S. and Canada since 1957.



### H. M. Fisher Joins Biggs Foundry and Fabricating Co.

. . . at its Akron, O., plant as vice pres. and gen. mgr. He was previously with Firestone Tire and Rubber Co., Adamson United Co. and Baldwin Rubber Co.

## Increase Chip Flow CUT CHARGING TIME

### with Navco "Long-Stroke" Pneumatic Vibrators



Keep chips moving with an even, controlled flow—reduce digester charging time up to 50%. The Navco BH-4" Pneumatic Vibrator has a long stroke for maximum amplitude and thrust. Vibrations go right through heavy bin planking or steel plate—dislodge frozen or wet arched wood chips without damaging bins or structures. Long piston strokes "move" chips—instead of "packing" them with high frequency action of other vibration methods. Pneumatic operation eliminates steam corrosion and fire hazards. Piston is the only moving part; unit is practically maintenance-free, even under adverse operation conditions.

Write for details of sample installations, layout sheets, and specifications.

Dept. P-11

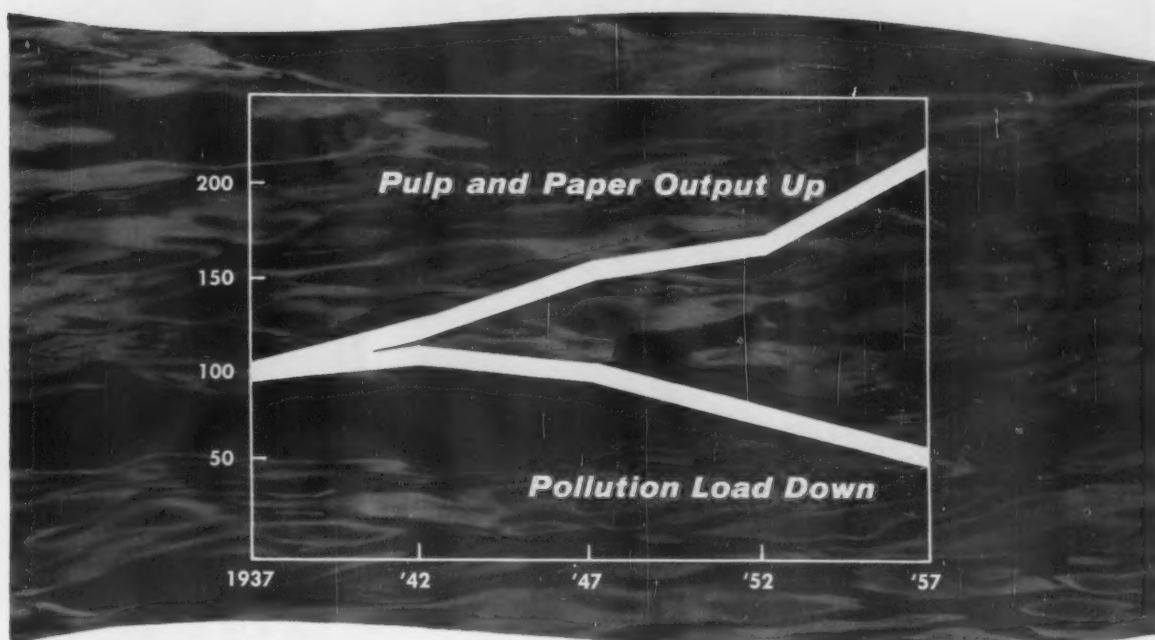
**NAVCO** NATIONAL AIR VIBRATOR CO.

2372 W. 7th St. • Cleveland 13, Ohio



# Reduce filler and fiber loss

## ... minimize stream pollution



Source: National Council for Stream Improvement (of the Pulp, Paper, and Paperboard Industry).

**For your "white water" treatment program use these General Chemical products:**

ALUMINUM SULFATE

SODIUM SILICATE

CHROME ALUM

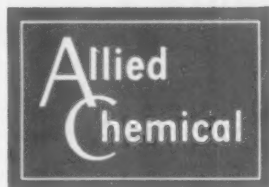
SULFURIC ACID

Self interest and the public interest are one and the same when it comes to treating "white water." Chemical treatment with appropriate coagulation chemicals pays off in important savings through recovery and re-use of filler and fiber... stream pollution is minimized by delivering a clearer effluent.

For the chemicals you need in your "white water" treatment operations, call on General! General Chemical has served

the paper industry for over 50 years... is a leading producer of Alum and many other water-treatment chemicals. Producing works and stock points from coast to coast are geared to meet your needs efficiently and quickly. That's why General Chemical is your *best* source of supply. Experienced technical service is always readily available. For further information, just write or phone our nearest office.

Basic Chemicals for  
American Industry



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## Continental Can Increases Capacity with G-B Evaporators

High capacity with the greatest overall economy, these were the evaporator requirements at Continental Can's Southern Advance Bag operation, Hodge, La.

G-B supplied the answer with this five body, quintuple-effect evaporator. The unit is equipped with external catchalls as well as stainless steel tubes and protection in the 1st and 2nd effects. The unit is designed to evaporate 226,000 pounds per hour of water, with an economy of 4.22 pounds of water per pound of steam.

Contact G.B. for further information.



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MANUFACTURING CO., INC.  
BIRMINGHAM, ALABAMA

FILTERS • EVAPORATORS  
PROCESS EQUIPMENT  
CONTRACT MANUFACTURING  
including HEAVY CASTINGS



**Leslie S. Pearson Joins  
Southworth Machine Co.**

...as mgr.—paper mill div. in Portland, Me. Mr. Pearson was formerly industrial engineer of the S. D. Warren Co. He was born in England and came to the U. S. in 1926. He has held top positions as chief accountant, comptroller, methods engineer, plant mgr. and industrial en-



**Eugene L. Vogt      Edwin G. Siewlewicz**

### Will Service for Huyck Felts

Mr. Vogt, as felt sales engineer for Illinois, Kansas, Missouri, Oklahoma and parts of Indiana, Iowa and Wisconsin; and Mr. Siewlewicz as field service engineer for Michigan and parts of Illinois, Indiana, Ohio and Pennsylvania.

Mr. Vogt attended Western Michigan Univ. For the past four years, he has been on the Huyck engineering staff in the Midwest. Previously, he was with KVP Co. and Sutherland Paper Co. Mr. Siewlewicz attended the U. of New Hampshire and after serving with the Army, graduated from Philadelphia Textile Institute. He has had several years experience in manufacture of industrial fabrics.



**Paul B. Smith, Res. Engineer**

... for Bailey Meter Co., Cleveland, at Portland, Ore. subdivision of Bailey's Seattle district. Mr. Smith's headquarters are at 825 N. E. 131st Place, Portland 30. A graduate of the University of Illinois, he joined Bailey Meter as a cadet engineer in 1946. Since 1957 he has been in Seattle.

## MEETING DATES CALENDAR

Nov. 5-6  
**TAPPI Corrugated Containers Conference**  
Netherlands-Hilton Hotel, Cincinnati, O.

Nov. 11-12  
**National Paperboard Assn.**  
Waldorf-Astoria Hotel, New York

Nov. 13  
**Miami Valley Div., APPMSA**  
Manchester Hotel, Middletown, Ohio

Nov. 14  
**Southeastern Section, TAPPI**  
Florence Country Club, Florence S.C.

Nov. 20  
**Michigan Div., APPMSA**  
Hotel Harris, Kalamazoo, Mich.

Dec. 4-6  
**APPMSA Pacific Coast Div.**  
Sir Francis Drake Hotel, San Francisco, Calif.

Jan. 14-15  
**Annual Pulp and Paper Conference**  
Western Michigan U., Kalamazoo, Mich.  
**TAPPI-APPMSA Joint Meeting**  
Hotel Harris, Kalamazoo, Mich.

Jan. 28-30  
**CPPA Annual Meeting**  
Queen Elizabeth Hotel, Montreal, Que.

Feb. 2-6  
**Canadian Materials Handling Exposition**  
Exhibition Grounds, Toronto

Feb. 22-26  
**Paper Week—APPA, TAPPI, SAPI**  
Waldorf-Astoria and Hotel Commodore, New York

Mar. 16-20  
**National Assn. of Corrosion Engineers, Pulp and Paper Symposium**  
Hotel Sherman, Chicago, Ill.

Apr. 21-28  
**Netherlands Packaging Exhibition EURONAPAK 1959**  
RAI Exhibition Halls, Amsterdam, The Netherlands

May 21-23  
**Pacific Coast Div. OPPMSA and Pacific Coast Section, TAPPI—Multiple Water Use Seminar**  
Gearhart Hotel, Gearhart, Ore.

May 25-27  
**TAPPI Coating Conference**  
Hotel Statler, Boston, Mass.

June 2-4  
**APPMSA National Meeting**  
Shamrock-Hilton Hotel, Houston, Tex.

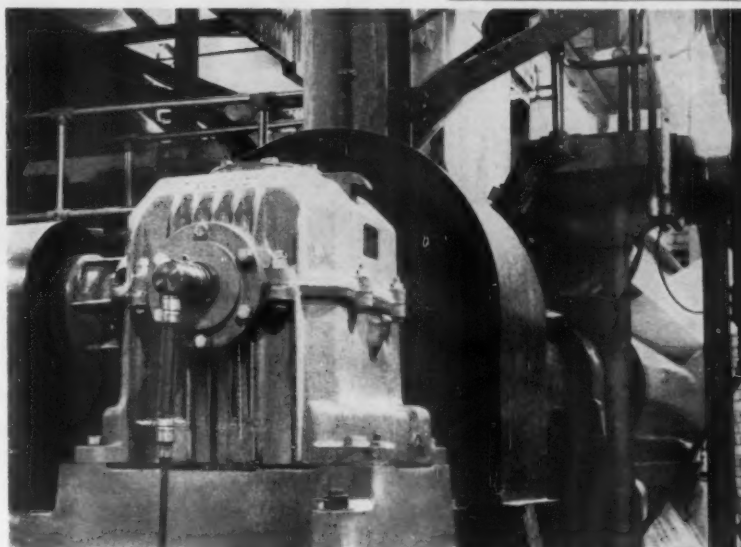
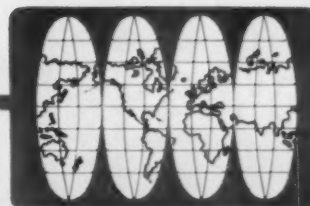
## Johnson Wire Works Enters South with New Plant

The Johnson Wire Works Ltd., Montreal, Canada has formed a new company, Atlanta Wire Works Inc., to weave paper mill wire cloth in the Southern United States.

A plant is being erected in Atlanta, Ga., and it is expected to be in operation in mid-1959.

## DAVID BROWN

at work  
around the world



This Canadian installation is typical of the cooperative service of David Brown companies around the world. Write for details.

## ...HELPING TO SMOOTH THE WORK OF A SMOOTHING PRESS!

It always matters how you gear a new installation such as this smoothing press at Rolland Paper Company's St. Jerome, Quebec mill. The gear in this case is a David Brown 17" spiral bevel unit — one of many used on the new machines by Millspaugh, famous for paper industry equipment.

This modern right angle drive installation can run continuously, hour after hour. Its 4 to 1 ratio will transmit 200 hp at 2,000 rpm pinion speed — with a high (98%) efficiency. These compact and sturdy spiral bevel gears are made in sizes from 6" to 60" by David Brown Industries.

The popular fan-cooled Radicons are also widely used in the paper industry — specified by original equipment manufacturers. They have learned Radicon's ability to withstand extremes of temperature, dust, dirt and rain — with initial low cost, and low maintenance.

Immediate delivery on Radicons 3" to 14" all standard ratios from 5:1 to 60:1. Radicon complete drives supplied by all authorized David Brown factory branches and distributors.



**DAVID BROWN, INC.**

999 Beecher Street, San Leandro, California  
6025 Atlantic Blvd., Maywood, California  
1224 S.W. Morrison St., Portland, Oregon

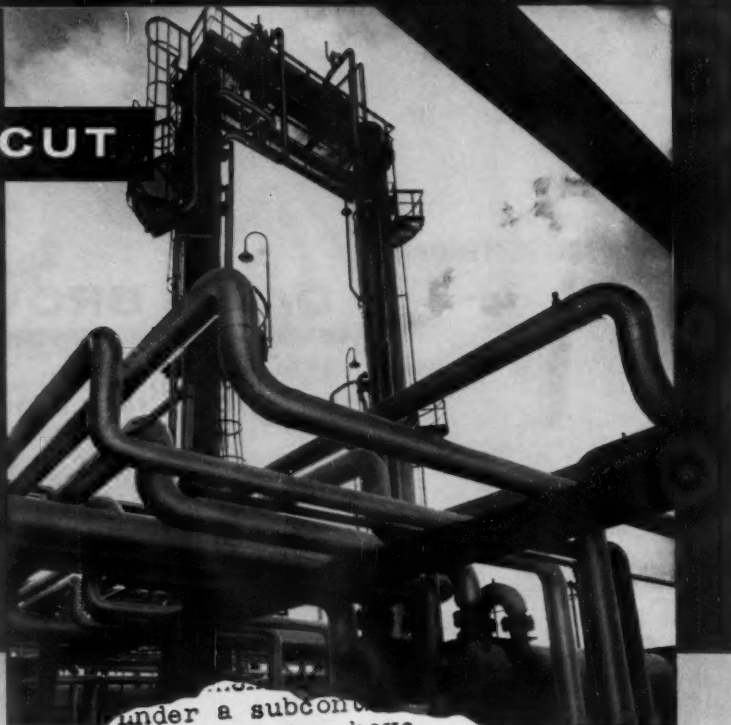


NOT ONE FIELD CUT

in all This

**MIDWEST**

**Shop-Fabricated  
Piping**



...under a subcontract  
and I would like to say the West Coast Division have  
on this job complied fully with the high standards of  
workmanship for which Midwest is known.

Throughout this entire project not once was a cut  
necessary to correct any piece of fabrication, and  
I might add in several instances close tolerances had  
to be met.

The above was not written on an impulse but as con-  
struction superintendent, this means but one thing:  
fast and low cost erection. Would appreciate your  
thanking Midwest personally for ... from a construction

Excerpt from letter by:  
**HOLMES & NARVER • Engineers-Constructors**  
828 South Figueroa St. • Los Angeles 17

Note particularly the words "fast and low cost erection" in the above letter. They characterize Midwest Shop-Fabricated Piping . . . whether for refinery, power plant or industrial installations. In this instance they were written by A. H. Chamberlain, construction superintendent, upon completing the installation of a Houdriformer Unit at the U.S. Oil & Refining Co., Tacoma, Washington.

There are three well-equipped Midwest pipe fabricating shops located to serve economically all sections of the country. Each is staffed by a highly skilled organization using the latest techniques. Each has wide experience on all kinds of projects so that the possibilities and limitations of all piping materials are well understood. You too will find it to your advantage to call in Midwest whenever you need fabricated piping.



**MIDWEST PIPING COMPANY, INC.**

Main Office: St. Louis 3, Missouri (P.O. Box 443)  
Plants: St. Louis, Clifton, N.J. and Los Angeles

**SALES OFFICES:**

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BOSTON 27—426 FIRST ST. • CHICAGO 3—79 WEST MONROE ST.  
CLEVELAND 14—616 ST. CLAIR AVE. • HOUSTON 2—1213 CAPITOL AVE.  
LOS ANGELES 33—520 ANDERSON ST. • MIAMI 34—2103 LE JEUNE RD.  
NEW YORK 7—50 CHURCH ST. • PITTSBURGH 19—437 GRANT ST.  
SAN FRANCISCO 11—420 MARKET ST. • ST. LOUIS 4—1450 SOUTH SECOND ST.  
TULSA—1640 E. 21ST ST.

8033

Statement required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of PULP & PAPER, published monthly except in July when publication is semi-monthly at Bristol, Connecticut for October 1, 1957.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publishers: Wm. B. Freeman, L. K. Smith, Miller Freeman, Jr., 500 Howard Street, San Francisco 5, California; Editor, Albert W. Wilson, 1791 Howard Street, Chicago 26, Illinois; Managing Editor, None; Business Manager, Ralph R. David, 370 Lexington Avenue, New York 17, New York.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder

the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given). Miller Freeman Publications Incorporated, 500 Howard Street, San Francisco 5, California; Wm. B. Freeman, L. K. Smith, Miller Freeman, Jr., 500 Howard Street, San Francisco 5, California; W. E. Crosby, 71 Columbia Street, Seattle 4, Washington.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder

appears on the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

Miller Freeman, Jr.,  
Publisher

Sworn to and subscribed before me this 1st day of October, 1958.

[Seal] Barbara M. Hampson,  
Notary of the Public  
San Francisco, California

My Commission expires February 18, 1962.

# Knox Felts

## KNOX WOOLEN COMPANY

### CAMDEN, MAINE

*America's First Manufacturer of Endless Paper Machine Felts*

## Chemical Pulping Processes

The high degree of chemical, mechanical and physical control over materials and operations in the Chemipulp and Chemipulp-KC systems results in maximum plant output, high pulp quality and low operating costs.

- Circulating Systems
- Chip Distributor
- Chip Pretreatment
- Waste-Liquor SO<sub>2</sub> Gas and Heat Recovery
- Independent Recovery System
- Jet-Type Sulphur Burners
- Hot Acid Systems
- Hydroheater
- Spray-Type SO<sub>2</sub> Gas Cooling System
- Acid System (Bubble Absorption)

**Chemipulp Process, Inc.**

Watertown, N. Y.

*Associated with*

Chemipulp Process, Ltd., 253 Ontario St., Kingston, Ont.

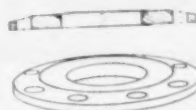
*Pacific Coast Representative*

A. H. Lundberg Inc., P.O. Box 202, Mercer Island, Wash.

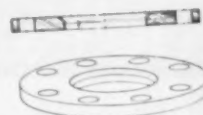
## it's 'Alaskan' Stainless Steel for BACKING FLANGES

for use with stainless steel stub ends

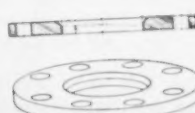
SK-39  
MALLEABLE IRON



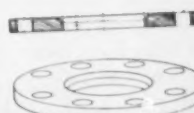
SK-70  
CAST STEEL



SK-60  
MALLEABLE IRON



SK-40  
MILD STEEL



STAINLESS STEEL PIPE & FITTINGS  
... for the Pulp and Paper Industry

**ALASKAN COPPER**

SEATTLE WORKS WASHINGTON

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MEMO TO MEN  
ON THE WAY UP



**WHERE THERE'S BUSINESS ACTION THERE'S A BUSINESSPAPER**

Used to be a song, back in the Thirties, titled, *Little Man, You've Had a Busy Day*. Didn't mention the Big Man. But his days are busy, too. He's the man who must make top-level decisions in business. And to make those decisions, he must have facts. All the facts. All the pertinent information he can get.

He finds time, in his busy days, to get that information. How? By getting a major portion of it from one unique source: the business publications serving his particular field.

No businessman, Little or Big, is fully informed until he reads his businesspaper. He reads it for profit, not for

pleasure. He searches it through for news of the trade or industry. For facts. For fresh ideas. For new products he can put to work. And he reads the advertising with the same intense concentration he devotes to the editorial pages.

For the man on his way toward becoming a Big Man, his businesspaper is especially important. Take a tip from the reading habits of key men at every level. Take out a subscription of your own. Then, make the time to read every issue—and read it thoroughly.

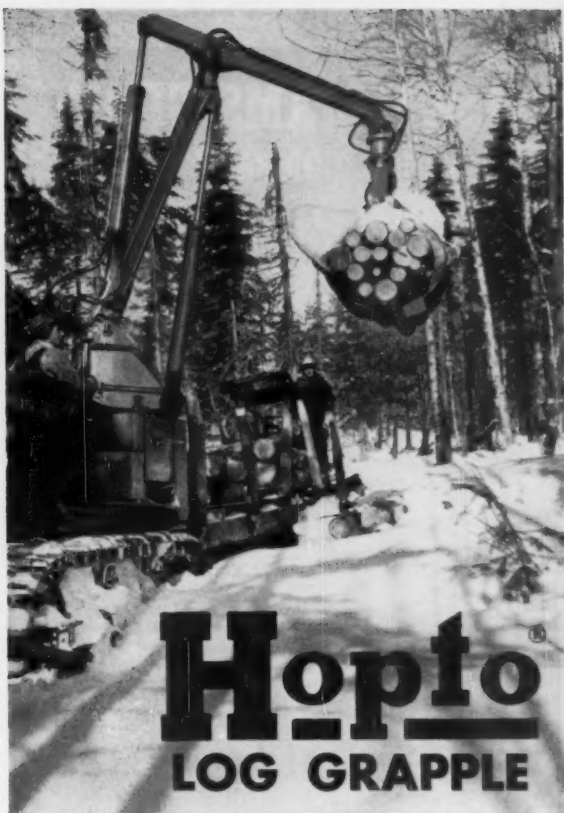
**PULP & PAPER** for the U.S. market

**PULP & PAPER INTERNATIONAL** for export

370 Lexington Ave., New York 17, N.Y.

One of a series of advertisements prepared by THE ASSOCIATED BUSINESS PUBLICATIONS





## Hopto<sup>®</sup> LOG GRAPPLE

### *Loads 100 cords of strip-cut pulpwood per 8-hour day!*

Four Hopto Log Grapple units load up to 500 cords of 8' pulpwood per day at the Mosher camp of Newaygo Timber Company south of Hearst, Ontario. Newaygo's Hoptos, mounted on D-6's and D-7's, operate over rough terrain in temperatures down to 60° below. Loading 2½ cord sleds, a single Hopto handles 100 cords of strip-cut and 130 cords of skid-cut in an eight hour day—including moving time. Man-hours have been cut 25% over previous methods.

The all-hydraulic Hopto is fast, safe, sure. No drums, cables, pulleys, or gear boxes . . . not even a trip line. A hydraulic grapple rotor enables operator to line up loaded grapple during swing; re-position for another bite during return cycle.

Hopto models for truck or crawler tractor mounting are available to meet your requirements . . . to help you cut your man-hours 25% or more! Write for complete information.

## Hopto<sup>®</sup>

a product of

**WARNER & SWASEY**

BADGER DIVISION • DEPT. PP • WINONA, MINNESOTA

Please send me all the facts on the Hopto Log Grapples

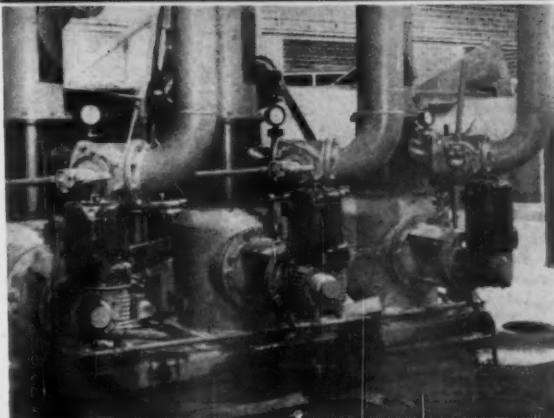
Name

Address

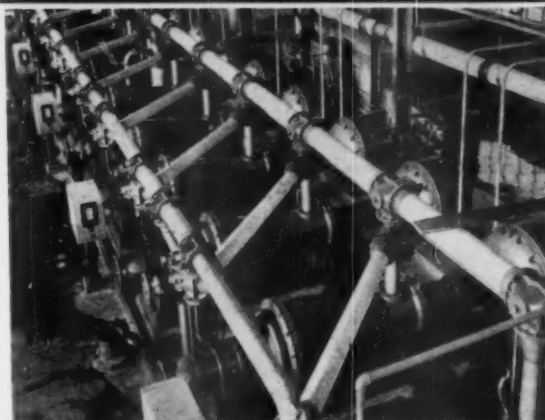
CITY  STATE OR PROVINCE

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## DeZurik Valves



### ..Straight-Way..



### ..or Multi-Port..

## *the finest in the field!*

The effortless operation . . . the dead-tight shut-off . . . the freedom from constant maintenance—these features are yours with DeZurik Valves in straight-way or multi-port styles!

And you'll find they last longer, too!

Judged by any standard, DeZurik Valves give you more of what you want . . . more of what you need!

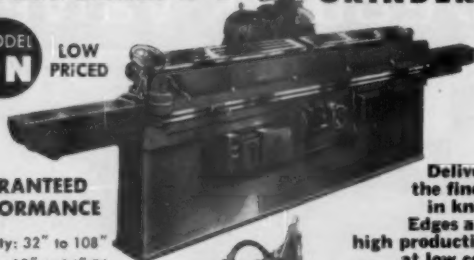
Write for recommendations.



**DeZURIK**  
CORPORATION  
SARTELL, MINNESOTA

## HANCHETT KNIFE GRINDERS

MODEL  
**DN** LOW  
PRICED



**GUARANTEED  
PERFORMANCE**

Capacity: 32" to 108"  
Wheels: 10" to 14" Dia.  
Table Drive — Timing Belt  
with Elec. Reversing Motor  
Motor — 3 H.P.

DEALER  
INQUIRIES  
INVITED

**Delivers  
the finest  
in knife  
Edges and  
high production  
at low cost**



MODEL  
**GK**

**HEAVY DUTY**

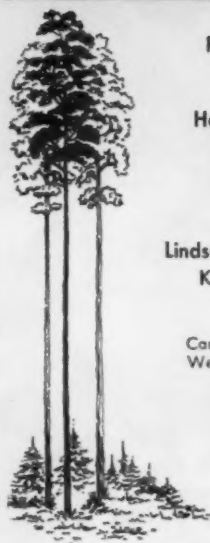
Capacity: 32" to 196"  
Wheels: 14" — 16" — 20" Dia.  
Motors: 3 to 15 Horsepower  
Table Drives: Mechanical—Electric—Hydraulic  
Precision Built—accurate—rugged and quiet

**HANCHETT MANUFACTURING CO.**

Main Office: West Coast:  
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Paul Foster • Peter Talbot  
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Lindsay & Niagara Wires  
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Carrier Rope, Splicing Tissues, Deckle  
Webbing, Apron Cloth, Wire Brushes

## RED-RAY Infra-Red Gas Burners

The fast, economical, modern  
drying method:

**GUMS-INKS  
COATINGS**  
(POLYVINYL-STARCH-CLAY)

Write for information to:

Red-Ray Manufacturing Co., Inc.  
318 Cliff Lane Cliffside Park, N. J.  
Tel: WHitney 3-1000



**SINCLAIR'S  
Self-Cleaning  
SIZE STRAINER**

*No finer STRAINER made . . .*

Removes hair, slugs and other unwanted foreign materials continuously. Completely self-cleaning. Available in 40 GPM and 100 GPM capacities. Like all other Sinclair products, our size strainers have all the built-in quality features you need to do your jobs the way they should be done.

**FOR SPECIAL SERVICES, Call our Customer Service  
Department. They are always ready to Serve You.**



**THE SINCLAIR COMPANY**

62 APPLETON ST., HOLYOKE, MASS.  
JEfferson 2-9488



## Gradall® with positive control grapple racks 202 cords of pulpwood in 7½ hours!

First day on the job it more than *doubled* the previous best day's production of 70 cords at United States Gypsum Co., Greenville, Mississippi! In one hour it unloaded and racked 26 cords from this barge!

Gradall's new and exclusive *positive control grapple* has the full range of movements of a giant arm and hand—positive opening and closing of tines to insure full loads, positive rotation and vertical movement of grapple for neat racking, plus positive down pressure of the boom. Let us prove how it can cut your pulpwood handling costs—write today for a demonstration.

© Reg. U. S. Pat. Off.

**Gradall**  
DIVISION OF WARNER  
SWASEY  
Cleveland  
PRECISION  
MACHINERY  
SINCE 1880

MAIL COUPON BELOW FOR FREE  
LITERATURE ON NEW GRADALL GRAPPLE

Gradall Division—Dept. PP-11  
WARNER & SWASEY COMPANY  
5701 Carnegie Avenue  
Cleveland 3, Ohio


Please send me free literature on faster pulpwood  
handling by positive control grapple Gradall.

Name \_\_\_\_\_ Title \_\_\_\_\_

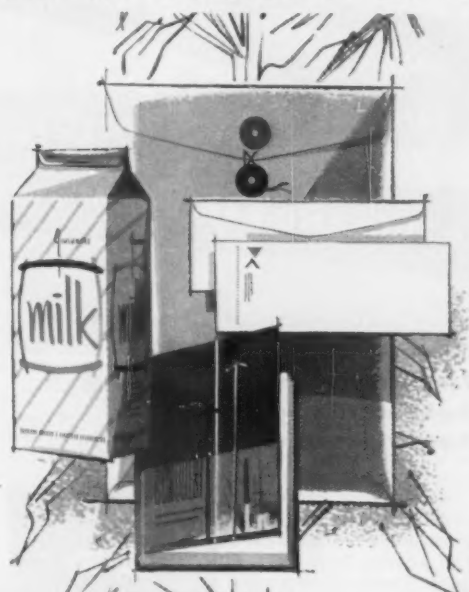
Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



Look what happened to  
the corn we took off the cob



**STARCHES • DEXTRINES • GUMS**

For all phases of paper manufacturing  
and converting... beaters, tub sizing,  
coatings, calendering, corrugating  
and laminating.



**ANHEUSER-BUSCH, INC.**  
CORN PRODUCTS DEPARTMENT

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111 Sixth Street  
DAYTON, OHIO  
629 Storms Rd.

COLUMBUS, GA., 2319 Hamilton Rd.  
GREENVILLE, S. C., 129 Cureton  
PHILADELPHIA, PA., Bourse Bldg.

NEW ORLEANS, LA., 314 Girod St.  
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# The DRAPER *Felt*

DRAPER BROTHERS COMPANY  
CANTON, MASS.

## COMPLETE ENGINEERING AND CONSTRUCTION SERVICES FOR THE PULP AND PAPER INDUSTRY

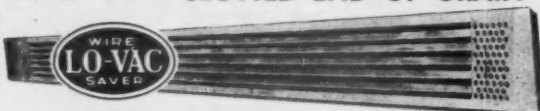
- Design and Construction of Pulp and Paper Mills
- Steam and Hydro-Electric Power Plants
- Power Studies
- Reports and Appraisals
- Recovery Plants, Extensions and Alterations

Send for our booklet,  
"Engineering, Design,  
Construction for Industry"  
Address Dept. R,  
Ebasco Services Incorporated  
Two Rector Street,  
New York 6, N. Y.



NEW YORK • CHICAGO • DALLAS • PORTLAND, ORE.  
SAN FRANCISCO • WASHINGTON, D. C.

## NOW THERE IS A NEW, IMPROVED SLOTTED END OF GRAIN



### SUCTION BOX COVER

The characteristics of end grain Maple naturally provide a smooth, even, long wearing surface. Laminated plastic cross members support the Maple end grain lands. LOVAC construction eliminates sag. Check these features: Eliminates streaking, less pinholes, lessens clogging, gives longer wire life, even vacuum, better fibre formation and better tensile strength.

Write for nearest representative, data sheet and literature.

APPLETON WOOD PRODUCTS CO. APPLETON WISCONSIN

## CLEAN PAPER

is impossible with old, worn Screen Plates. Change to new, fine-cut "Fitchburg" Screen Plates and be amazed at the instant improvement in QUALITY.

### "FITCHBURG" New Type—Duplex Slot FLAT PLATES

Stainless Steel and Rolled Bronze

Plain or  
Chromium Plated

BIRD SCREEN PLATES  
JONES SCREEN PLATES

### FITCHBURG Screen Plate Co., Inc.

301 South Street  
Fitchburg  
Massachusetts



## SULPHITE MILL ACID PLANTS SEMICHEMICAL LIQUOR PLANTS

SULPHUR BURNING PLANTS  
GAS COOLERS—SURFACE AND SPRAY TYPE  
JENSSEN TWO TOWER ACID SYSTEMS  
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RECOVERY PLANTS—COOKING ACID

### SOLUBLE BASE ACID PLANTS

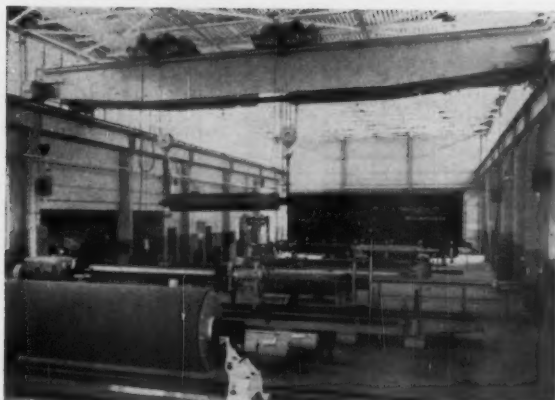
JENSSEN SO<sub>2</sub> ABSORPTION SYSTEMS  
FOR BLEACH PLANT APPLICATION  
SULPHUROUS ACID PREPARATION  
COMPLETE DESIGN AND INSTALLATION

### G. D. JENSSEN CO. INC.

MASSENA, NEW YORK

Western Representative:

James Brinkley Co., 417-8th Ave. So., Seattle, Wash.  
FOUNDED 1915



**Simplify Paper  
Roll Handling  
Problems with**

## **EUCLID CRANES**

Paper Mill Cranes are a specialty of ours. We've helped build our reputation through close cooperation with production supervisors and engineers in the paper industry.

Shown here is a 30 ton, 5 motor, double box girder Euclid crane in operation at a large southern roll reconditioning plant.

It is floor controlled for convenient operation and incorporates two independently operated trolleys. We'll be glad to discuss your crane or hoist requirements with you.

for details write **THE EUCLID CRANE & HOIST CO.**  
1363 CHARDON ROAD • CLEVELAND 17, OHIO

# **ROGERS**

MODEL **300** EXTRA  
**HEAVY DUTY  
KNIFE GRINDER**

with  
**HYDRAULIC  
DRIVE**

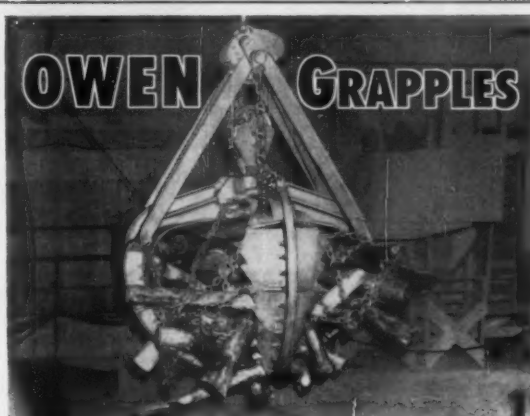


**SIZES:**  
**78" to 240"**  
**CAPACITY.**

Other Standard Equipment includes Heavy Duty Precision Ball Bearing Spindle, 26" Segmental Grinding Wheel, 25 HP TEFC Motor, Automatic Force Feed Oiler, 8" x 8" Swiveling Knife Bar, Wet Grinding and Precision Wheel Dresser. Write for complete information. Other Models available.

SINCE 1887

**SAMUEL C. ROGERS & CO., INC.**  
2070 SHERIDAN DRIVE • BUFFALO 23, NEW YORK



### **A SAFE INVESTMENT**

In addition to the independent fine action (an exclusive OWEN patent) that gives OWEN Grapples greater grabs and larger log loads, you will find them more dependable and real time and money savers. A complete line of models and sizes, in both 4-prong and open side types.

Write today and get convincing facts and special illustrated pulpwood bulletin... free upon request.

**The OWEN BUCKET Co.**  
BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago  
Berkeley, Calif. • Fort Lauderdale, Fla.

SOUTHERN CORPORATION, CHARLESTON, S. C.

THE  
**MOORE  
AND  
WHITE**  
CO.

**CUSTOM  
BUILT  
MACHINES  
FOR MAKERS  
OF PAPER  
AND  
PAPERBOARD**

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Pennsylvania

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&  
W**

Represented on West Coast  
by Stephen Thurlow Co.,  
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Seattle 4, Washington



**FABRICATORS FOR  
THE PAPER INDUSTRY**

**DESIGNERS and FABRICATORS of  
AIR MOVING EQUIPMENT . . .**

**ENGINEERED AIR SYSTEMS — MACHINE HOODS —  
TRIM CONVEYORS — AIR DRYING — MAKE UP AIR  
SYSTEMS — Westinghouse STURTEVANT FANS  
AND STEAM COILS**

Use our Experienced Engineers in solving your air moving problems. You will find our direct approach practical. An inexpensive solution may be available to you.

**OVERLY'S INC.** BOX 468, NEENAH, WIS

## BURGESS-MANNING "WSS" WATER SEPARATOR SNUBBERS

- Silence water-sealed vacuum pump exhausts
- Remove 100% of water from exhaust

Particularly adapted to the paper mill where any content of water in the exhaust gases from vacuum pumps is costly and dangerous. The "WSS" will accommodate water having a percentage of settlings and impurities — convenient clean-outs are provided. Water is removed centrifugally and drained off at the bottom of the unit. Standardly available in sizes from 1½" to 12". Also models to meet unusual and corrosive conditions, and sizes larger than 12".

Ask for Bulletin No. 270



**BURGESS-MANNING COMPANY**

Sound Engineering

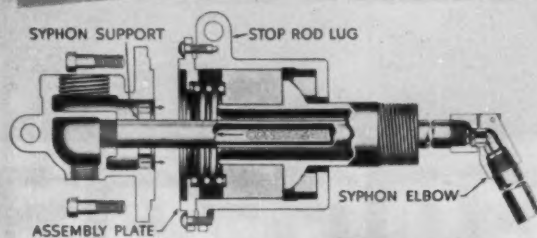
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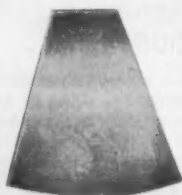


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## A New Kind of Peddlers' Club

We had a refreshing experience on a little sortie up to Appleton, Wis., a few weeks ago.

There is a new "peddlers'" group formed up there, name is VISA (short for Valley Industrial Salesmen's Assn.), and it has some really high-minded and laudatory objectives.

Some 46 salesmen who reside in the Fox River Valley have banded themselves together with the serious intention of helping each other to do a better job in serving the pulp and paper industry of Wisconsin.

At their meetings they invite their customer-contacts to come in and lay it right on the line—tell them frankly if they are suffering from any salesmanship versions of b.o. They want to know how to better themselves and they are really digging into the problem. There's no fooling at these meetings and no punches are being held back.

Allen Gray, Jim Mills, Larry Pittelkow, Matt Healy, Jack Ayers and other "moving spirits" in this new organization deserve a hand. This is an activity that peddlers in other regions might advantageously consider taking up, too.

The Wisconsin men have proved there is a common ground where salesmen can meet and really accomplish something for their mutual benefit (see story in this issue).

## Put in Proper Proportion . . .

Ten years and more than 2½ million dollars later, the Camas Crown Zellerbach pulp and paper mill is showing progress on pollution control in the Columbia river, and it's time that the public fully understand this fact.

This largest job supplier in Clark county, and one of the top six in the state of Washington, has assumed its responsibility in this difficult situation. It believes reasonable progress is being made on the Sphaerotilus situation. "Continuation of this progress—on the basis of voluntary cooperation between private industry and the state authorities—seems to us the best guarantee of achieving early and constructive results," F. O. Boylon, resident manager, told the Columbia River conference recently.

The Pacific Northwest and the nation as a whole has faced economic readjustments in the past two years. If it were not for the Columbia river and its water, there would be no paper mill at Camas. And if there were no paper mill at Camas, there would be 2,600 families which now depend on the mill for living who would not be able to enjoy the recreation of river fishing, nor the other climatic advantages of this locality.

So let's put things in their proper proportion.—An editorial in the Camas, Wash., Post-Record.

## Sneak Clause Upsetting

While considering extending the federal Small Business Act during the last session of Congress, an amendment—not previously considered and cleared by committee—was introduced from the Senate floor making the sale of U.S.-owned timber subject to the act. It was a surprise to everyone concerned and passed by voice vote. Even the big federal timber agencies such as the U.S. Forest Service had no opportunity to comment on it.

How will this affect needed forest management?

Lack of timber access roads on federal lands has always been a prime obstacle to sound forest management. It is

true today and will continue to be for years to come. But of the millions of forest acres currently accessible—for protection from fire and pests, for recreation, for timber harvesting—the roads making this possible have been chiefly financed and built by private industry. The purchase of timber has been conditional on the building of high-cost roads for removal of same. This not only includes branch roads, but mile upon mile of high-standard mainline forest roads now carrying tourists from all over the nation, which were built and paid for by large logging companies and small ones, too.

If government has to guarantee a "proportion of the total sales" (this phrase is lifted from the SBA amendment) to "small business concerns" the present inadequacy of forest access may well be needlessly extended for decades to come.

At presstime the immediate possibilities for minimizing disruptions to management and utilization of federal timber portended by the snap-passed SBA amendment lay in the Small Business Administration's anticipated definition as to just what qualifies as a "small business" concern.

Incidentally approximately 70% of the timber sold by USFS during the past five years has been purchased by organizations which qualify as "small business" under the present SBA definition.

Regional characteristics of the forest products industry should be taken into consideration in defining "small business" as far as timber purchases are concerned.

## From Finland to Arkansas

These recent weeks found PULP & PAPER's representatives traveling far and wide again to bring the latest information to its readers.

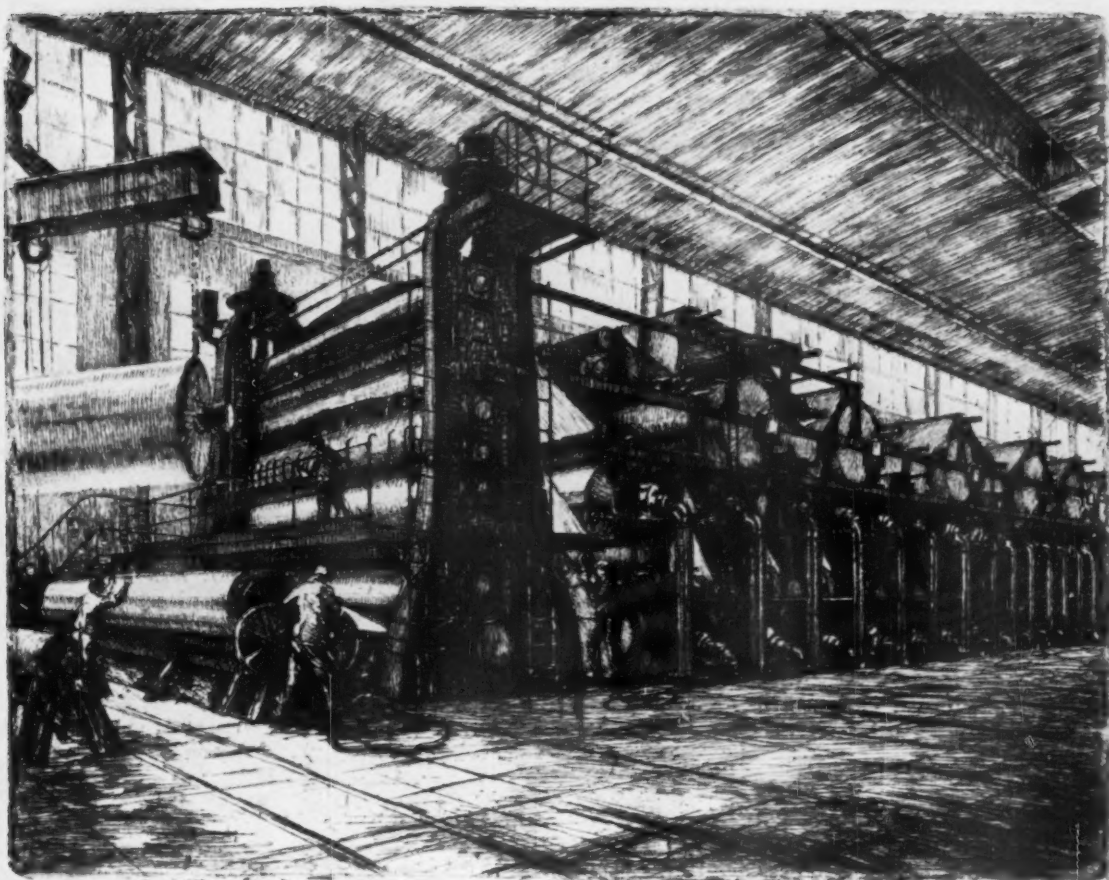
Ralph R. David, sales mgr., was touring Europe from London to Sundsvall, Sweden, and Helsinki, Finland, in the interests of the new sister publication, PULP & PAPER INTERNATIONAL, which begins regular monthly publication in January, going to virtually every mill in the world outside of U.S.A. He found time to visit several mills and attend a European TAPPI study group meeting in Turin, Italy.

**GET-TOGETHER** at Appleton meeting: Frank X. Kreiling, paper mill supt., Thilmany Pulp & Paper Co., and a leader in industry association affairs, visits with L. K. Smith and Roy R. Grundy.



Kreiling . . . . . Smith . . . . . Grundy

Lawrence K. Smith, vice president, Miller Freeman Publications, Albert W. Wilson, editor of PULP & PAPER, and Roy Grundy, district sales mgr. in Chicago, went to the Northwestern Division, Supts. Assn., meeting in Appleton, Wis. Then Mr. Wilson went to the international Fundamental Research Meeting in Montreal, sponsored by TAPPI and CPPA's Technical section, and attended by delegates from ten nations. Later he went to the Alkaline Pulping Conference in Hot Springs, Ark., with William F. Diehl, Jr., Southern editor. Maurice R. Castagne, Eastern editor, attended another international meeting on mechanical pulping in Quebec City. These were just a few ports of call of the P&P and P&PI staff in the recent weeks.



"Dry End" Original etching by Paul Winkler-Leers from the Asten-Hill collection.



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